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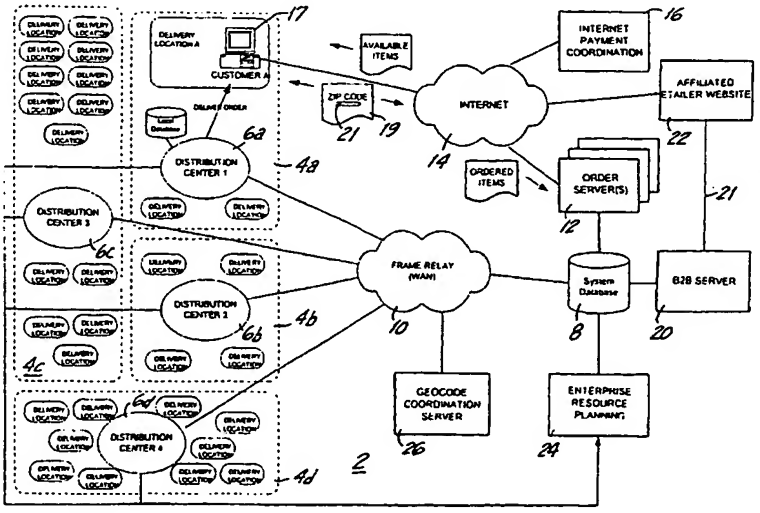

(57) Abstract: The present invention implements an order delivery methodology for customers to place orders over the Internet. Customers (17) in predefined geographical regions (based on zip code, delivery address, etc. (19)) access a web site to order videos, game cartridges, snacks, etc., and can have the selected items delivered within the hour or within a customer specified delivery window. A network of distribution centers (6a-6d) are defined, with the order assembled at the point closest to the customer. A shopping cart-like container is used to store items until the customer checks out. A routing algorithm is used to determine the best manner to deliver the ordered items at the requested delivery time.

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SYSTEM AND METHOD FOR REAL-TIME ORDERING AND DELIVERY OF LOCALLY AVAILABLE PRODUCTS

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is based on and claims filing priority of co-pending U.S. provisional patent application serial no. 60/147,112, which was filed on August 4, 1999 and is incorporated by reference herein.

TECHNICAL FIELD

This invention relates to a method and system for customers to place orders for items such as DVD's, videotapes, books, magazines, CD's, perishable items such as ice cream and hot meals, etc. to be delivered in an extremely time-sensitive manner, where the order may be placed by means such as an Internet web site. It is the intent of this invention to provide a method for customers to order these purchasable and/or rentable products from a distribution network of quick response distribution centers and have them delivered in an extremely fast and efficient manner.

BACKGROUND ART

Prior art videotape rental stores allow customers to have an account where the customer may enter the store and select one or several videotapes to rent. In the past, customers have experienced difficulties in trying to rent videotapes and DVD's from traditional video stores due to the large amount of work necessary to go to the video store (only during the store's business hours), search for available titles, rent them (if available) and go home. The customer may additionally purchase other items from a store

inventory of purchasable goods while looking over the available inventory of videotapes, DVD's, or game cartridges. A customer may travel to a video store and be disappointed if the desired product is unavailable.

Systems and methods that are used to deliver goods from one location to another may be highly organized such as route based delivery systems, or informal systems such as might be used to deliver orders from a pharmacy. Delivery-based companies that provide for delivery as part of the service offered often provide a delivery service to a distribution area for a product offering that is the same across all members of the franchise. A customer places an order to a toll free number that is subsequently transferred by a central system to a local distribution location for subsequent delivery. Since all of the franchise members provide the same service and product, the customer does not know where the product is fabricated or delivered from. Additionally, the stores that have signed up to this prior art system do not typically communicate with their peers.

Package shipment companies such as UPS use distribution hubs where the products are picked up from known pickup points or locations of the sender, then shipped throughout the night to the destination hub location where they are made available for local delivery via trucks that have scheduled and flexible route points. The trucks are loaded overnight so that the trucks are ready for delivery in the morning following shipment. The delivery systems typically use a central distribution point or store where delivery vehicles (trucks, cars) are periodically loaded, and drivers are given a route that allows them to deliver

products to the customers. The customers may have called in the order via phone to initiate the product selection and delivery portions of the order. Distributed unattended drop-off and pick-up locations may be located throughout a serviced territory where the delivery agent periodically visits the location to pick up items to be shipped. These systems do not have inventory to control or managers and only distribute goods shipped by others.

What is desired therefore is a system that can efficiently implement a real-time network-based order and delivery system where the items ordered are rapidly compiled and prepared for delivery. It is an object of the present invention to provide such an order and delivery system that implements a readily-available, customer-friendly user interface such as an Internet web site in order to allow customers to find items of interest in a timely and easy manner, place an order of the desired goods, and pay for the goods and services with a checkout methodology.

It is a further object of the present invention to provide such a real-time network-based order and delivery system that allows customers to view, in real time, the availability of a given item on the user interface so that only items that are currently available are displayed as being available to the customer.

It is also an object of the invention to provide such a system that is duplicated in organization, logistics, style, and offerings, across geographically disparate areas such as metropolitan cities around the world, such that the customer can access the system from any city serviced by the

local facility in that city and have goods delivered to him at that city using the same familiar user interface and ease of operation that the customer has grown accustomed to in his home city, without having to re-register as a new customer of the system.

It is a further object of the present invention to provide such a real-time network-based order and delivery system that has overlapping product distribution centers located in a given geographical area, such that an alternate product distribution center can be used to service a customer when a primary product distribution center normally associated with that customer (i.e. closest to that customer's residence or place of work) does not currently have in stock a product immediately desired by that customer.

It is a further object of the present invention to provide such a real-time network-based order and delivery system that can receive, process, compile, and deliver a customer's order in an extremely time-sensitive manner by using various just-in-time fulfillment and delivery methodologies, hub and spoke delivery methodologies, and the like, in order to ensure timely delivery of perishable items such as ice cream.

It is a further object of the present invention to provide such a real-time network-based order and delivery system that will allow customers to interactively view, in real-time, the progress of his order, from reception and compilation to delivery through the route taken by the delivery agent.

It is a further object of the present invention to provide such a real-time network-based order and delivery system that will allow delivery dispatchers to calculate in real time the optimal route for delivery, thus ensuring timely delivery of the orders.

It is a further object of the present invention to provide such a real-time network-based order and delivery system that utilizes historical delivery data, taking into account various parameters, in order to continuously re-assess delivery routing methodologies as a function of such continually varying parameters.

It is a further object of the present invention to provide such a real-time network-based order and delivery system that provides incentives to customers in particular geographic regions, by displaying to those customers certain discounts that are available to that customer if an order is placed at a certain time, thus economizing on the predetermined routes of deliver agents.

DISCLOSURE OF THE INVENTION

In accordance with these and other objects, the system of the present invention implements an order delivery methodology for quick response ordering, delivery and status tools for a customer to place an order over the Internet that allows customers within predefined geographical regions (based on zip code, delivery address, etc) to access a web site to order videos, game cartridges and snacks, and to have the selected items delivered within the hour or within a customer specified delivery window. The system uses the

geographic region of the customer to determine the best shipping point for the order. A network of distribution locations are defined, where based on the customer's location, the order is assembled at the point generally closest to the customer. A shopping cart-like container is used to store items until the customer "checks out". A software routine allows the order manager to see the shopping cart prior to "check out" so that the order may be pre-picked. Customer profiles and transaction history for the customer may be reviewed during ordering to determine from past orders how the customer typically expects delivery. A routing algorithm is used by the system to determine the best manner to supply the items at the delivery time requested. In particular, the system uses an elastic coordination point that can vary from time to time in accordance with the requirements of that delivery. The customer profile may also be used prior to check out to notify delivery agents of pending orders so that instantaneous changes to the routing of the delivery agent may be made before he leaves the distribution location with other pending orders. A network of coordinated distribution centers allow for the system to find a customer requested item from a remote destination center if the current inventory does not have the requested item.

The system may automatically release customer orders to be pulled from pre-allocated stock to fulfill a previously submitted order request at the appropriate time in order to provide delivery during the customer specified delivery window. The system provides feedback to the delivery agent for dynamic routing requests and coordinating

point changes that allow the delivery agent to be given an order in the field as a dynamic modification to their route.

Customers of the system are allowed to see the routes of the delivery agent and to view the current location of their order such that they can coordinate their arrival at the same time as the delivery agent.

The system uses rules and algorithms for time management for the scheduling of order deliveries where the dispatcher may determine from the delivery agents' route progress and the amount of time it takes to hand-off new deliveries to the delivery agent whether new deliveries may be accommodated in their schedules and how to optimize the coordination locations between delivery agents and hand-off delivery agents that move products from the distribution center to the delivery agents on routes.

A strict delivery schedule is maintained where goods are delivered according to a planned route generated by the system or the dispatcher, based on the known route for a delivery agent and the estimated impact of additional deliveries for that agent. A distribution team coordinates with the zone distributors by accessing the system to determine the best point for meeting the zone distributor at a scheduled stop where the transfer of goods are provided to the zone distributors. The route of the zone distributor may be modified in real-time to receive other products for distribution without returning to the hub distribution center. Zone distributors then deliver the goods to the destination address or to other zone distributors to facilitate the movement of goods to a geographically remote

area. The zones are planned where some overlap between routes exists to cover heavily serviced areas and to additionally allow for interaction between delivery agents which may also be called zone distributors.

The system of the present invention allows for coordination of distribution centers where items requested by a customer from one center that are not locally available, are requested from other distribution centers in real-time as the customer selects the object via the customer's web browser. Upon completion of the order, the order items are checked and compared against the pre-picked order items. Any additions or deletions are retrieved from or replaced into stock and the corresponding inventory quantities are adjusted. Depending on the delivery time selected by the customer, the non-perishable items are placed in a queue corresponding to the distribution zone, perishable items for the order are identified and moved from the available stock storage area to a distribution zone storage area. In anticipation of the delivery time, the actual delivery schedule of the zone distributors are reviewed to identify the best zone distributor to perform the delivery.

The system maintains a series of rules for delivery and estimated delivery times, where the system is able to receive feedback on actual delivery times and allows the zone distributor to identify specific actual delivery performance to generate changes of the routing to accommodate picking up new products, returned products such that they may be delivered to the end customers of the

system, to intermediate handlers, or returned to the distribution center for reallocation.

Thus, in accordance with a first aspect of the invention, provided is a system and method of a customer ordering an item for delivery to a selected one of a plurality of delivery locations, each delivery location located within at least one of several predefined delivery zones, by providing an identifier web page from an order server computer to a client computer associated with the customer, the identifier web page comprising a field for entry of a geographic identifier associated with the desired delivery location. The customer enters the geographic identifier associated with desired delivery location for submittal to the order server computer. The order server computer determines, as a function of the geographic identifier received from the customer, a group of available items for delivery to the desired delivery location, the group of available items being located in a distribution center associated with the desired delivery location. The geographic identifier may be a zip code or a street address.

Each delivery zone has associated therewith a distribution center, each distribution center having stored therein a group of items available for delivery to an associated delivery location. The order server computer determines a group of available items for delivery to the desired delivery location by accessing a database comprising information on all items available at all distribution centers and extracting information on only those items indicated in the database as being available at the

distribution center associated with the desired delivery location.

An item availability web page is dynamically created by the order server computer and served to the client computing device for display thereon. The item availability web page comprises a list of items available at the distribution center associated with the desired delivery location. The customer selects at least one item for delivery to the desired delivery location by indicating on an order web page to be transmitted to the server computer. An order is compiled for the customer, the order comprising at least one item selected by the customer for delivery to the desired delivery location. The order is transmitted from the order server computer to a distribution center computer associated with the distribution center associated with the desired delivery location. The order may be pushed by the order server computer to the distribution center computer in a predetermined manner controlled by the order server computer, in the alternative may be pulled from the order server computer by the distribution center computer in a predetermined manner controlled the distribution center computer.

The order is fulfilled by retrieving each item selected by the customer and indicating in the distribution center computer that the retrieved item is no longer available for subsequent ordering. The distribution center computer comprises a database of all items available at the associated distribution center, and the database is synchronized with the order server computer so that the

order server computer has an accurate representation of the available items in the distribution center computer.

In a second aspect of the invention, provided is a system and method for creating an order delivery manifest by generating a plurality of item delivery orders, each item delivery order comprising a list of items selected by a customer for delivery to a desired delivery location within a predefined window of delivery time. An optimal sequence of delivery is determined for each of the plurality of item delivery orders in succession by a single delivery agent to each associated desired delivery location within the predefined window of delivery time. The optimal sequence of delivery is then assembled into an order delivery manifest for use by a delivery agent in delivering the plurality of item delivery orders within the predefined window of delivery time.

In particular, the determining of an optimal sequence of delivery comprises the steps of displaying the plurality of item delivery orders on a computer display screen(s) in tabular and/or graphical format; and a dispatcher manually analyzing the plurality of item delivery orders on the computer display screen(s) to determine the optimal sequence of delivery. In the alternative, the system may automatically analyze the plurality of delivery orders to determine the optimal sequence of delivery.

The step of analyzing may comprise the steps of reviewing the desired delivery location for each item delivery order and determining a logical grouping of item

delivery orders based on the relative proximity of each item delivery order with respect to each other.

Further steps may include reviewing the predefined window of delivery time for each item delivery order and determining the logical grouping of item delivery orders based also on the predefined window of delivery time for each item delivery order to ensure that the delivery agent will be able to deliver each item delivery order within the associated predefined window of delivery time. In addition, item parameters associated with the items selected by the customer for delivery may be analyzed, and the logical grouping of item delivery orders may be determined based also on the analyzed item parameters, which may be the size of each item, the weight of each item, and/or the perishable nature of each item.

Further steps may also include reviewing the weather conditions existing in proximity of the desired delivery locations for each item delivery order and determining the logical grouping of item delivery orders based also on the reviewed weather conditions. Further steps may also include determining which delivery agent out of a pool of available delivery agents will be assigned to deliver the item delivery orders, analyzing a database of delivery agent parameters associated with the assigned delivery agent, and determining the logical grouping of item delivery orders based also on the analyzed delivery agent parameters. The delivery agent parameters comprise historical data regarding prior efficiency of the delivery agent.

The order delivery manifest may be printed for use by the delivery agent or may be stored in electronic format in a hand held computing device suitable to be carried by the delivery agent.

BRIEF DESCRIPTION OF THE DRAWING

Figure 1 is a system block diagram of the preferred embodiment of the present invention;

Figure 2 is a block diagram of the order and manifest processing;

Figure 2A is a delivery manifest;

Figure 2B is an order ticket;

Figure 3 depicts the use of elastic hand-off coordination;

Figure 4 illustrates an item availability web page;

Figure 5 illustrates a geographic identifier web page;

Figure 6 is a screen shot of the map display; and

Figure 7 is a screen shot of the map display with a suggested manifest.

BEST MODE FOR CARRYING OUT THE INVENTION

General Operation of the System

The system of the present invention implements an order delivery methodology for quick response ordering, delivery, and status tools for a customer to place an order with a web site on the Internet. The preferred embodiment system allows customers within predefined geographical regions (based on zip code, for example) to access an Internet-based web site in order to order DVD's, videotapes,

game cartridges snacks, etc., and to have the selected items delivered within a quick timeframe or within a customer-specified delivery window. In the preferred embodiment, the order is delivered within one hour from the time it is entered by the customer on the web site, wherein the customer may be located in essentially any portion of a large metropolitan area such as New York City.

The system 2, as shown in basic format in Figure 1, is configured to service geographically disparate regions referred to as delivery zone 4a, 4b, 4c, and 4d, which as shown herein are in close proximity to each other such that an entire metropolitan area such as New York City will be completely serviced by the system. This configuration may of course apply across various cities as desired. In this embodiment, the service area is divided into the four delivery zones as shown in the Figure. Each delivery zone is serviced by a distribution center 6a, 6b, 6c, or 6d (referred to generally as distribution center 6), which will likely but not necessarily be centrally located within the delivery zone. Each spoke distribution center 6 is in communication with a system database 8 through a frame relay wide area network (WAN) 10, as shown in Figure 1 and described further below.

A customer such as customer A desiring to have goods delivered to him through the system 2 will use a client computer 17 to communicate with an order server 12 via the Internet 14. Shown in Figure 1 are a plurality of order servers 12, which are used for load balancing, but in practice only one such order server 12 is required. When the customer A logs onto the web site served by order server

12 (such http://www.kozmo.com), he must provide a geographic identifier such as the zip code where the delivery will be made. The geographic identifier is used by the system to determine which distribution center 6 will be used to provide the order based on the location within the system. The geographic identifier will also be used to display to the customer the inventory that is currently available at that distribution center 6 so that he will order only goods that can actually be delivered within the hour.

The customer provides the required geographic identifier by entering it in the geographic identifier field 21 on the web page 19 shown in Figure 4A, which is returned to the order server 12.

The system database 8 is accessed by the order server 12 based on the zip code entered, and after the customer places his order (described below), payment is coordinated with Internet payment coordination service 16, which is a commercially available payment system such as CYBERCASH. Once approved for purchase, the order is provided by data transfer to the appropriate distribution center 6 based on the zip code of the customer, which in this example would be spoke distribution center 6a.

The order may be provided to the appropriate distribution center in various ways. The order, after being received and payment confirmed, may be "pushed" (i.e. sent automatically) to the appropriate distribution center, based on the zip code. This would happen as soon as the order is ready to be released due to the time sensitivity of the order. In the alternative, the system may be configured for

each distribution center to periodically "pull" orders by a polling system. In this embodiment, each distribution center would query the database 8 if an order has arrived for that distribution system (based on zip code) in a round-robin fashion. As long as the orders are provided to the appropriate distribution center in a timely fashion, either system would be acceptable.

Figure 2 illustrates the process flow at each distribution center for fulfilling and delivering the items ordered. When the incoming order is received at the distribution center, it is input to an order dispatching system 30, printed out as an order ticket 33 by printer 32, and given to an order picker for fulfillment. The order picker will retrieve the ordered items from a warehouse/fulfillment area 34, which will typically be a large area containing products on shelves, bins, in refrigerators, etc., in accordance with known warehousing and product distribution techniques. For example, a bar code system may be used for inventory purposes, where the order picker carries a bar code scanning hand-held computer for helping in picking the correct items. The order picker may use a carton to collect the ordered items, which is then placed in an order assembly area 36. A clerk takes the items from the carton in the assembly area 36 and places them with the order ticket 33 into one or more bags suitable for being carried by a delivery agent to the customer's delivery location. The ready-to-deliver bags are then placed into a delivery staging area 38 until the delivery agent is ready to leave and make the deliveries.

As the order is being picked and assembled, the order dispatching system 30 is utilized to generate and print a manifest 40, which is a list of orders for delivery arranged in a logical order (e.g. by street number). Generation of a manifest is an important feature of this invention that facilitates immediate delivery of orders to many customers in the delivery zone. The manifest generation is handled by a dispatcher, usually with the help of the order dispatch system 30, who directs which orders should be given to which delivery agents at which times as will be further described below. The manifest 40 is handed to an appropriate delivery agent, which then collects the orders on the manifest from the delivery staging area and starts his delivery.

An example of a manifest 40 is shown in Figure 2A. The manifest includes an order number, an indication of the number of bags for that order, the name of the customer, the address for delivery, the time required for the delivery, and any special instructions indicated by the customer at the time of placing the order such as "leave with doorman".

An example of the order ticket 33 is shown in Figure 2B. The order ticket 33 is used by the order picker to collate the order, and will also be included with the order that is delivered to the customer. Thus, the order ticket 33 has information useful for the customer as well as the information required by the order picker. As such, the order ticket will have an order number for tracking purposes, the name and address of the customer, the date and time that the order was placed by the customer, and the requested delivery time. A list of the ordered items is

also shown, which will include the product number, description, bin number (location of the item in the warehouse/fulfillment area 34), the time due back to the system if the item is a rental item, the title of the item, quantity, and price. The order ticket also includes a list of available item return locations (drop boxes) that the customer may use to return the rented items before the due date. As shown in Figure 2A, the customer in this case has been given the location of drop boxes at three locations nearby his home (or office, wherever the order was delivered). The customer may also view the system web site to see a complete list of drop off locations as well as request an agent to personally pick up the item from the customer's premises.

The system determines the closest drop off locations be checking a database that lists the available drop off locations and their proximity to various addresses. Thus, by entering the customer's address, the database will return the three closest drop off locations for printing on the order ticket 33. In the alternative, co-marketing arrangements may be made with affiliated brick-and-mortar companies that may include drop boxes on their premises in exchange for advertising. Thus, a coffee shop may include a drop box in its store, and the system would be configured to instruct the customer to go to the coffee shop to return the item. This scenario will drive foot traffic to the coffee shop and likely increase sales at the coffee shop accordingly.

Another field printed on the order ticket 33 is the co-marketing bin field, shown in Figure 2B as "Bins: 2". A series of bins are located near the order assembly area, each having promotional materials such as coupons, free

giveaways, brochures, etc., for inclusion in certain orders. The determination of which promotional items are to be added to a given order is made by the system in an intelligent manner, as a function of a previously-acquired profile of the customer, the items ordered currently (or in the past) by that customer, and the nature of promotional items available. For example, a music company may provide $5.00 coupons applicable towards purchasing a soundtrack of a given movie, and request the system to give one to each customer that rents or buys that movie. The coupon would be placed in Bin 2, so that the simple instruction placed on the order ticket 33 by the system will cause the order picker to place the coupon into the order bag without having to know or understand the nature of the system.

The customer's computer 17 may be any type of computing device configured to communicate over the Internet in one or more of any known ways. For example, the connection may be over a dial-up connection, DSL, cable modem, LAN, T1, wireless link, etc. The customer's computer also includes a display for presenting web pages downloaded from the order server 12, and means for inputting data such as a keyboard and mouse or other type of pointing device. The customer's computer is preferably a desktop computer connected to the Internet, but it may also be a handheld device, a television interface device such as WEBTV, a telephone, a wireless paging device, or any other device capable of generating order input and transmitting that order to the order server 12. In the preferred embodiment, the data is exchanged with the order servers 12 by Internet communications, but it also envisioned that orders may be placed by telephone, fax machine, and the like, where an

order taker will enter the order into the system for delivery in accordance with this invention.

The order server computer 12 includes means for providing web pages to the customer's computer over the Internet in response to his requests, means for determining inventory from system database 8 in response to the requested items, means for completing the order, and means for securing payment for the ordered items by communicating with the Internet payment coordination service 16. The order server 12 also has means for recording and processing orders for deferred delivery (i.e. those not required to be delivered in the next hour).

User Interface

The customers connect to the order server 12 by downloading an identifier web page 19 as well known in the art, which will provide a geographic identifier field that requires entry of the geographic identifier. The customer will then enter a zip code, address, or other geographic indicator representative of a delivery location.

In the preferred embodiment, a real-time inventory of items available in the distribution center 6 associated with the customer's zip code is presented to the customer to display items from which a customer may select for delivery. The customer may optionally identify items not held in the associated distribution center 6 to cause the system to coordinate the request with other distribution centers to identify the location of the requested item. When a nearby distribution center has the item in stock, it can indicate the availability to the customer, and coordination of delivery is accomplished as described further below.

The present invention allows customers to view general information about the products that may be ordered

via a series of linked web pages that are downloaded to the customer's computer. The customer is requested to enter his zip code prior to viewing the web pages that indicate the availability of products for rent or purchase on this system, since the availability is a function of the distribution center that is chosen by the system to serve the customer based on the delivery location. A customer placing an order for delivery in zone 4a would preferably be served from distribution center 6a, while a customer from zone 4b may receive service from distribution center 6b in order to ensure speedy delivery (i.e. within one hour). The order server 12 and system database 8 determine products available at the distribution center 6a that are associated with the zip code of the customer and present dynamically created item availability web pages to the customer that display those locally available goods for review and selection by the customer. An example of an item availability web page is shown in Figure 4.

In the alternative, the system may use other types of customer identification methodologies, such as "cookies" that are well known in the art. The system would use the cookie stored on the user's computer to automatically identify the customer and a default delivery location (which would likely be predetermined at registration). In this case, the customer would not have to enter the geographic identifier, but could override the system default if desired (for example to deliver goods on his account to a friend's house). The delivery location indicated by the cookie would be used by the system to determine the items available for order at the appropriate distribution center.

The selections made by the customer may initiate other actions on the order server, where the order server

identifies related items that can be added to the order of the selected items, which may then be presented to the customer in banners or other content areas of the user interface. For example, if a customer orders a music magazine for delivery, the system may detect this and provide a web page that offers a related CD.

When the customer is ready to order the items selected, the customer profile information is read from local storage, or alternatively from a centralized customer profile database. This profile information is previously recorded from a membership request form. The customer specifies the delivery destination and the preferred time of delivery, which may be "as soon as possible" (i.e. within one hour) or may be later that day (i.e. after dinner). The delivery destination and time may be requested by the system prior to the customer selecting any items to be ordered. In this manner, the system may determine whether the items should be pulled from stock instantly upon selection, or whether the items should be identified to be held for later delivery.

A web page that lists available items (e.g. a list of the 50 most popular DVD's for rent) may indicate if a given item is available or is currently sold out at that distribution center. This gives the customer insight as to the unavailability of a desired item. However, the customer may be given the option to obtain the sold-out item from an alternative distribution center, perhaps with an understanding that there may be an added delivery delay if the alternative distribution center is much further away from the delivery destination than the primary distribution center. A connection between the primary distribution center and the alternative center may then be made to locate

items selected by the customer that are not immediately on hand. If the item exists in the inventory of the alternative distribution center, then the order server 12 would indicate the availability of the requested item and may additionally indicate that the delivery time would be impacted if immediate delivery was requested. For example, the system could inform the customer that the requested DVD or game cartridge is not available for one hour delivery, but could be delivered in 1½ hours from a distant distribution center.

Although the system is normally configured to print an order ticket 33 for use by the order picker in collating the order after the order is complete and paid for, an optional mode may be employed by the system in peak demand times. As the customer selects items to be added to his order and prior to submittal of the final order, (i.e. items are placed in the web "shopping cart") the system may optionally provide a view of the items selected to the order pickers at the appropriate spoke distribution center 6a in real time, such that the items in the order may be provisionally pulled from stock and placed in a pending mode. If the customer cancels the order, then all pending inventory changes are reversed or discarded. The profile may also be used prior to check-out to notify delivery agents of pending orders so that instantaneous changes to the dispatch routing of an agent may be made to include this pending order. The dispatching system may additionally be given this information in advance of the order being completed so that the dispatcher may delay an agent from leaving the spoke distribution center until the current order is included in a modified delivery route for that

agent. This may be especially important during times of heavy order request traffic.

Orders placed through the order server 12 include the following information:

- Desired delivery time window (allowing for reservation of movies, books, etc. in advance through the web site)
- Items to be rented or purchased
- Address to which the order is to be delivered
- Desired payment method

The customers may thus search for availability of items such as videotapes 24 hours a day, by choosing a category or entering a title of the movie sought into a form field on the web page. The web page contains a navigational area, hyperlinks, drop down boxes and data input form elements to allow the customer to navigate to the content of interest. Snack items may be ordered from the site by viewing a form of available offerings. The customer may reserve the videos in advance, get information about the item rented over the web, and get the item delivered to their household within one hour of rental.

The customer can browse for videotapes, DVD's, video games for rental on the web site using a variety of search criteria. The customer is able to view more information about the item than is normally available in traditional rental stores due to the instant availability of movie reviews, synopses, and other customer reviews.

Dispatch/Delivery/Routing Methodology

Each time-critical order is logged by the order dispatch system 30 and sorted according to territory or distance from other delivery destinations, order content, and the amount of time remaining to deliver the order. It is imperative that the orders are organized into a manifest as quickly as possible and provided to a delivery agent. A dispatcher operates the order dispatching system and reviews currently executing deliveries to identify how best to service the newly received orders. The dispatch system 30 utilizes two display screens or windows that present the pending orders in different formats: (1) a list of orders, referred to as the order board 33, and (2) a graphical map of orders 35 correlated to the list on the order board. The system may determine automatically which route is to be effected or modified by a newly received order. The time for each delivery remaining for a given delivery agent (or "runner") is evaluated to ascertain whether new orders can be handed-off to the existing delivery agents in the field as described below. Travel time to move the order from the distribution center to an elastic coordination location is estimated. The dispatcher communicates with the delivery agents to arrange the time and location of the drop off, and then the packages are moved to those locations.

As described below, rules are recorded in a database in the dispatching system 30 for calculating the best route to be taken from one general location to another or to determine the earliest time that can be accommodated for an order requiring immediate delivery. Products offered for sale may be perishable (such as ice cream), where it is critical that the order be delivered to the customer when he is at the destination specified by the order.

The immediately deliverable orders may be integrated into the existing schedule of agents in the field, or they may be compiled into a new route for one or several delivery agents that are standing by. The dispatcher coordinates the orders for a particular delivery agent into a sequenced route according to known delivery criteria for the orders that may be serviced within the delivery window of an agent. Perishable deliveries are arranged toward the beginning of the route, if at all possible. The route instructions may be printed on the manifest 40 and then given to the delivery agent along with the assembled orders, so that delivery is performed according to the selected route.

Orders for different geographic areas that require delivery at the same time require the dispatcher to place more agents into service. The dispatcher uses known information about the routes and the territory covered in order to make knowledgeable decisions on the routing of delivery agents. In addition, as described below, a software process known as an intelligent dispatching program is executed that will take into account various factors in automatically determining the optimal route.

If an additional order is received during the previously scheduled route, then the dispatcher may query each agent in real time to determine their current location and the next scheduled delivery destination. The dispatcher may then determine if any of those agents should be met by a hand-off agent in order to complete new order deliveries. The factors that are continuously evaluated include

environmental factors such as traffic conditions, road work, time of day, and the weather.

The timing of these events require that the overall time to process the order is determined from the difference between the customer delivery time (CDT) and the present time (Tp) when the order is scheduled. This overall time to process (Tlife) is used by the system to determine when the order needs to be scheduled and the remaining life of the order. It is important to minimize the order processing (Tord) and dispatching time (Tdisb) to afford the delivery agents the most time for the delivery. The time to deliver (Tdel) is therefore Tdel <= Tlife -(Tord + Tdisb). The time to deliver (Tdel) may be additionally broken down into time to hand-off (Thand) and float time (Tfloat), where Tfloat is the delivery agent's time window for delivery of that order. For example, a customer requesting an order for delivery in one hour from the time of the order would have Tlife = 1 hour. If it takes 5 minutes to pull the order from stock, and 8 minutes to schedule and arrange a hand-off location, then the order has 47 minutes to be delivered. If it takes 10 minutes to get the order to the delivery agent, then the agent has a maximum of 37 minutes remaining of float time to deliver the order to the customer. In actuality, this is a worst-case example since it is desirable to deliver the order as soon as possible, and not at the end of the available timeframe.

If perishable items are included in the order, the time to deliver may potentially be shortened to be the minimum useable life of the perishable item if it is less than the remaining delivery time of the order. Ice cream,

for example, may have a delivery time of 20 minutes from the time the order is ready to leave the distribution center. The float time (Tfloat) is further reduced by the amount of time it would take to get to the destination if it were inserted in the route. The additional time to hand-off (Thand) and then go to this new destination (Tdest) and return to the original route will impact this new delivery and all of the subsequent deliveries on the remaining portion of the route. The remaining destinations are additionally impacted by the time to return to the route (Tret).

A secondary process is used to determine the fit of the order delivery into the agent's schedule, where sufficient time must exist in the float time of the pending orders being served by the agent. This is calculated by the dispatcher prior to selection of the agent and uses the parameters of each of the deliveries to determine the route modifications required.

The agents may be allocated to territories where he has particular familiarity, or any agent may be called upon to deliver to overlapping territories.

The orders are sorted on the order board 33 by several criteria for the dispatcher to view such as: delivery time, distance, and coordination required to reach the delivery destination. The dispatcher or the system may automatically select a group of orders to dispatch. The dispatcher or the system also selects and retrieves the routes of all of the available delivery agents in a given territory or on their way back to the distribution center.

The system may rapidly calculate distances and times to travel those distances in order to immediately reduce the number of routes that may be impacted by a new order. The system or dispatcher may then make routing decisions based on this reduced set of routes.

Where automated positional indicators are provided (such as GPS equipment), the system periodically or in real time examines each delivery agent's current position (either estimated or actual), reviews status of pending orders to be delivered, and interprets any environmental factors that may impact the delivery schedule. The system then generates an optimal set of routes for the agents to follow, subject to the following constraints:

- Each order must be delivered in its desired delivery window with the specified contents.
- Agents should not be loaded with more than their individual capacity constraints (both in terms of volume and weight).
- Certain agents travel at varying speeds.
- Agents not currently located at the home distribution center (i.e. agent A) may meet up with other agents (agent B) at any point along agent B's route and may commence his route from that point (elastic hand-off).
- The anticipated load for new orders from the order server (predicted from a different algorithm) must be able to be handled (e.g. you cannot send out all available delivery agents that are available if there are 10 orders about to be placed for the same time window) during a high volume time of day.

- Personnel issues related to fatigue (e.g. no delivery agent should spend more than 3 hours without coming back to the distribution center if it is below 30 degrees outside)

An electronic route is prepared and may be transmitted to a handheld or mobile computing devices of the agents mapping out the route to be taken.

The intelligent dispatch methodology will now be described in further detail. The intelligent dispatching software tool employed by the dispatching system 30 enables the system to handle the rapid increase in geographic growth and arrival times of orders. In order to ensure a one-hour delivery commitment, the dispatcher should be able to validate the logic inherent in the dispatch logic. This should dramatically increase dispatch efficiency and customer satisfaction. The dispatching software functionality enables the integration of two-way communications, GPS locating systems, and visual mapping software. It also handles the upload of initial time standards and creates a dynamic set of standards for the internal process flow and the external delivery network for each market.

The delivery network will typically be an extremely manual process. In order to maintain an efficient delivery network that has a high labor component, an effective set of operating procedures and standards has been evaluated. The present invention uses delivery methodologies that optimize the manual component of the delivery process. These methodologies leverage the extensive

industrial engineering and ergonomic studies already performed to provide a high level of methods training that limits extraneous movements and optimizes the efficiency of the system. This will assist the intelligent backbone in translating technical efficiency into manual efficiency.

The logic process operates under certain given constraints:

- One hour delivery window based upon actual order time
- Size and weight constraints based upon mode of transportation (rider, scooter, car)
- Time travel and delivery standards based upon mode, time of day (traffic) and weather conditions
- Geographic areas - Defined by zip codes and can be altered for a finer split
- Demand and order arrival is random
- Shelf life constraints exist for products (non perishables)

Input to the database include:

- Time standards for travel and delivery based upon weather, time of day, speed to weight ratio (riders)
- Average size and weight of products, shelf life constraints
- Drop-box locations
- Static meet points (distance from dispatch, zone - zone)
- Order arrival (customer information, order information)

- Delivery personnel two way feedback (order delivered , geographic position)
- Generates: Rider speed ratings by geographic area (Stops per hour, area knowledge)

A cycle time is developed based on how often the inputs are recalculated for the optimization algorithm. The information necessary can be broken down into four elements:

1. Location, Mode, and Availability

Utilizing the existing routes that have been assigned and the updated location and mode of active delivery agents, the software determines the availability times for all delivery agents on staff at any time. This is a function of validating assigned route times to actual updates captured by the communications software by either a GPS locator or an immediate update from a two-way communications device used by the delivery agent. Additionally, for each delivery agent, the distance from the dispatch location can be determined, as can space available by mode and travel distance from a geographic zone.

As a result, an indicator is determined of times available for each person on the delivery staff (active or non-active) and geographic location and space capacity.

2. Size, Weight, Shelf Life Rule

Utilizing the order information, the size and weight of an existing order can be calculated based upon the inventory database that has a specific set of standards for each product. Additionally, shelf life expectancy for ice cream items can be calculated so that during summer months

we can limit the amount of exposure time a product should be in the field before it is not presentable to the customer. These inputs are utilized to determine expected availability of an order based upon internal elemental time standards and dynamic upgrades of order flow visibility. These standards will be integrated into the order processing workflow and provide predictability of order availability.

As a result, a corresponding listing is obtained, with each order of the size of order, total weight, and life expectancy, and availability of each individual order.

3. Estimated Route Time

The "To/From Travel Time" is the set of travel times from each dispatch location to each delivery zone (by zip code or with finer granularity), which defines the travel time standard from dispatch to a potential delivery area. This will be variable, based upon weather conditions (wet, dry, snow, etc.), the time of day, and the weight of order.

"On Area Stops/Hr" is the set of standards that defines the average time per delivery in a given delivery area and the average amount of stops that can be performed in an hour. This is a dynamic standard as given the time of day and weather conditions, these standards should be updated to reflect actual times based upon two way communication feedback. This will be the backbone of the dispatch system, as the intra-zone travel and delivery times will determine finish and availability times of routes and the best assignments for the dispatcher.

As a result, given a set of manifests clustered as a route in a geographic zone, the estimated travel and delivery time for each route can be determined and compared to the required delivery time. Manifest deliveries can be re-sequenced to allow delivery in required time blocks to ensure 100% customer satisfaction.

4. Assignment

The logic of the clustering of orders is a function of minimizing travel time between orders in a geographic area and across committed delivery time. The base inputs allow the system to have a considerable amount of up-front data in order to utilize in an intelligent algorithm, which will be reconstructed based upon weighted inputs of product criteria, delivery conditions, staffing availability, and load on the system. The initial build out logical process would be as follows:

a. Order is entered

Order and customer location are geo-coded and assigned a geographic identifier.

- Size (sq inch),weight (lbs), and order shelf -life is created and linked
- Required delivery block and geographic zone is linked

b. Orders in a geographic zone are clustered and aggregated based upon

- Expected intra-delivery area and travel time (minimize)
- Expected travel path and time from dispatch

- Expected total delivery and route expected time
- Determine if modal capacity restraints apply
- Required availability time for route to executed

c. Check for availability of order from pack line (Continuous update from scan and pack)

d. Check for availability of riders in house (Continuous updating)

e. Check for availability of riders on area (Continuous updating)

f. Prioritize route assignment (dispatch origin) based upon mode, committed time, and delivery agent area speed and knowledge

g. Prioritize route handoff based upon the existing mode, the availability time for execution of order in one hour, the existing load on system, and the rider area speed

h. Recalculate if expected route time and availability options can secure 100% confidence of delivery of all orders in one-hour window (should be able to toggle delivery window)

Functionality that is continually evaluated includes the optimization of the handoff network to extend the warehouse delivery area and limit delivery agent interaction with warehouse transfer points, and the refining of weighted inputs based upon load on system and ability to slot

deliveries based upon network capacity to maintain expectations of the customers.

Historical information regarding order delivery is used by the intelligent dispatching methodology to extrapolate travel times based upon a variety of conditions (transportation type, day of week, time of day, date, weather, delivery agent, etc.) and combinations thereof. This information will be used on both a case by case basis and from statistics derived from this information.

Historical information will be collected by two different means. The first means of collection is from information entered into the operations software. This will include the delivery agent and his transportation type as well as the weather conditions. Entering this information will improve the abilities of delivery agents and dispatchers in the short term as well, which will provide incentive for accuracy.

The second way that data will be collected is from the hand held devices that are utilized by the delivery agents. These devices will report the travel time between different locations by getting a timestamp when each leg of the manifest begins and ends. The device will also collect the service time for each customer address.

The historical data will be stored in two different ways. The first is in a database table and in columns added to existing tables. This is where the data is stored as it is collected, and where the intelligent dispatching methodology can always find specific pieces of

data. This is the data that will be used when the system makes decisions based upon case knowledge.

The data will also be used to generate more general statistics such as the effect of various weather types on transportation types, travel time within particular zip codes, etc. This information will be used to fill in the gaps where specific case information is not available, or where a solution is needed quickly and accuracy can be sacrificed. The values of these statistics can be calculated in a batch process, which updates them as often as desired within the limitations of processing speed.

Once the historical information has been captured, the system will be able to use it to suggest optimized manifests which take into account all of the factors described above. Based on the information entered by the dispatchers and delivery agents (transportation type, weather, etc.) and system information (order location, time of day, etc.), the system will use the history to extrapolate delivery times. The intelligent dispatching methodology will look for the closest match to the current circumstance (including origin and destination) or combine historical cases to create a match. If this is not possible, the system will use more general statistical information at the lowest level of generalization possible (city, zip, zip+4) to augment the existing case information until an estimated travel time can be determined.

By way of example, assume that the system needs to determine the amount of time it will take a delivery agent to reach a customer location from the distribution center.

First, the intelligent dispatching methodology looks in the historical data for taking that trip with the current delivery type. If the system is not able to find a perfect match, it looks for a trip between the distribution center and the zip+4 that the destination location is in, and so forth. If the historical case does not perfectly match the conditions of the existing case, the system will use the statistical information to correct it. For example, if the matching case has a different delivery agent, the system will use statistical information to adjust the time, based upon the past performance of the delivery agent in the historical case and in the performance of the agent in the current case.

Geocentric modeling

In another aspect of the invention, the intelligent dispatch methodology utilizes graphical map data to organize and present order information.

There are two major features for the order board that are considered in this aspect of the invention: a map interface that will help dispatchers to visualize the current order situation, and the ability to ask for a manifest recommendation from the program. Both of these features will enable dispatchers to create and assign manifests more quickly. These features will become even more important when there are additional factors to be included, such as order weight, delivery agent fatigue, and a multitude of other considerations that would be very difficult or impossible to take into account simultaneously without these tools. By improving on the visualization

tools and artificial intelligence at a dispatcher's disposal, an environment is created into which the additional data is more effectively used.

There are some cases where the dispatcher needs to customize the settings of this geocentric system. The dispatcher sets an area of the map to be the default extent. The map will zoom to this extent at startup and whenever the dispatcher chooses. The default extent will be set to the current extent by choosing the option to set the default from an options screen. This extent can be restored by a button on the map controls menu.

The dispatcher will also be able to adjust variables used by the intelligent dispatch algorithm to reflect delivery agent availability, traffic, and other factors. It will also be possible for the dispatcher to save these values as defaults, which will be loaded at startup.

Referring to Figure 10, the dispatcher can view a map of the dispatch area with icons representing orders when this is desired. If the dispatching station has two screens attached, as shown in Figure 2, the dispatcher will be able to view both the current order board 33 and the map screen 35 simultaneously. If only one screen is available, it will be necessary to switch back and forth between these two windows in manner well known in the art.

Once the map screen in Figure 10 is visible, the dispatcher will be able to tell from the color and shape of the icons used on the map the time when orders are due and

whether they are packed. As shown in Table B below, a red icon indicates an order due within 15 minutes, a yellow icon is an order due between 15 and 30 minutes, etc.

In order to find out additional information about orders on the map, the dispatcher can select and click representing the order. This will highlight the appropriate order on the order board 33. The dispatcher can also select orders from the order board, which will highlight the icons for those orders on the map. This dual functionality is viable since the order board 33 and map 35 are different types of displays derived from the same underlying order data.

If the map becomes too cluttered with orders and is difficult to read, the dispatcher can apply filters to temporarily remove certain orders from view. Candidates for this filtering are orders with delivery times past a certain threshold and unpacked orders. Thus, the dispatcher can choose to see only orders that are almost due (red icons), etc.

In addition to the map user interface, the map-based embodiment will also include a methodology to suggest manifests to the dispatcher. When the dispatcher requests a suggested manifest, the system creates an ordered list of orders and a new manifest for them as shown in Figure 11. The dispatcher can then manually modify the suggested manifest, if desired. The dispatcher requests a manifest suggestion starting from a specific location. This location is described by either an intersection, an address, or as a manifest number. If the dispatcher gives a manifest number,

then the system uses the location of the first order on the manifest as the starting point for the suggested manifest. The dispatcher manually adds orders to the current manifest and then requests that the system completes it. This will be useful when the dispatcher wants to give certain orders preference over others.

There are map tools useful in this embodiment, which are the controls that are available for manipulating the extent of the map and the icons selected. It should be possible to switch between these both by using radio buttons (as shown in the Figures), or with key shortcuts. These include zoom in, zoom out, drag map to pan, selection rectangle, and zoom to default extent.

The following Tables explain the various symbols used:

Table A

Packed?	Manifested?	Description
No	No	Open triangle
Yes	No	Closed triangle
No	Yes	Bullseye
Yes	Yes	Closed circle

Table B

Time until due	Color
< 0 minutes	White
0 to 15 minutes	Red
15 to 30 minutes	Yellow
30 to 45 minutes	Green
> 45 minutes	Blue

The map filters that are available can enable the dispatcher to show only packed orders, show only orders that are not on manifests, show only orders that are for delivery, show only orders due within a certain number of minutes (entered by the dispatcher), and do not show orders until within a certain number of minutes of the due window (entered by the dispatcher). This keeps orders out of the way until the beginning of their delivery window is within a certain number of minutes. The other time filter uses the end of the delivery window.

The following variables may be customized and saved by the dispatcher for different messengers and vehicles: speed (m/minutes), time spent per stop (minutes), total time for the run (minutes).

Options that exist include the creation of a new manifest or addition to an existing one; the start at one of various points (the spoke, a corner, the first stop on a manifest, where the manifest number is entered by the dispatcher).

The functionality of the map features relies on obtaining and utilizing "geocode" information for customer addresses. Geocodes are the latitude and longitude of a location. This information can be obtained from many sources. For the purposes of this embodiment, street data for the entire country has been obtained. A commercially available software program such as MapObjects provides the functionality to convert addresses into geocodes. This is done in two phases. In the first phase, existing addresses will be converted to geocodes and this information is stored

in the database. This is an operation that can be run outside of business hours to convert the majority of order locations.

The second phase of geocoding occurs while the dispatcher is working. When geocode information is requested for an address, if that information is not available through the database it will be derived from the address using the local streets database. This information will then be stored in the database for future use.

A table called GEOCODE has already been created in the database for this purpose. The Geocode coordination server 26 shown in Figure 1 is used by the system to map geocodes to customers' addresses, usually at the time of registration.

Also at issue is insuring that each location has the appropriate street data. This data is divided up in such a way that each dispatch location can have the data specific to their city. We can treat the installation of this data in the same manner in which we treat the installation of applications.

The manifest that is suggested by this system is arrived at by the following algorithm:

Given these constants (which are given default values but may be modified by dispatchers):

s = amount of time spent at each stop (sec)

v = the speed of the delivery agent (meters/sec)

t = the total amount of time allotted for a

delivery run

T = a constant factor that reflects the weight of 'time due' for an order

The following steps are taken:

1) The program updates or creates a distance matrix of the order (and spoke) locations.
2) The program updates or creates a weighted distance matrix based on the 'time due' properties of each order. The weighted distance of an edge is the actual distance multiplied by the amount of time left until the order is due multiplied by T.
3) Using the weighted matrix, the program selects the closest order to the last order selected, or the starting point if no orders have been selected yet. If an order is already on a manifest it is not considered.
4) If the amount of time to get to that order (using the distance matrix and y) can be added to the total amount of time for the manifest without exceeding t, then add the order to the manifest.
5) Add the amount of time to get to the last order to the total amount of time for the manifest. Add s to the total amount of time for the manifest.

It is important that whenever the distance between orders (or an order and the spoke) is calculated, that this value be cached for future calculations. This information

will be saved in a data structure called the Distance Matrix, which parallels the order list. Each item in this list represents an order, and contains every distance that has been calculated from that order. When the order is removed from the order board, the item is also removed from the Distance Matrix.

The weighted distances, on the other hand, will only be useful for a short period. At a variable frequency, these values are updated.

Elastic Hand-Off Coordination

After the manifest is created as described above, the delivery agents pick up the orders for delivery, or if other orders arrive that may be accommodated by hand-offs in the field, then an elastic hand-off location may be arranged between a second hand-off delivery agent and one or more delivery agents such that the new orders are handed off at a location on or near the delivery agent's predefined route. For example, with regard to Figure 3, delivery agents A and B are proceeding on their routes 200 and 210 respectively. Agents A and B are shown as cars, but they may of course be utilizing any type of transportation such as bicycles, mopeds, foot travel, etc. For maximum efficiency, it is arranged that another delivery agent C leaves the distribution center with deliveries and instructions, which are to be handed off at point F to delivery agent B. The delivery can then be executed beginning at point Y, which in this example follows agent B's existing route. The dispatcher informs delivery agent B by cell phone, pager, etc. to arrange the meeting at point F.

After hand-off to deliver agent B at point F, the delivery agent C may then proceed to point E to meet delivery agent A. If it has been determined by the dispatcher that agent A can successfully deliver an order to point M, agent A's route is modified accordingly to follow path 230, slightly impacting the previously scheduled delivery to point X. The delivery to point X will still be timely since it was delayed only slightly be the new route. Agent A may then deliver to the new destinations marked on path 234. Agent C may at this point return to the distribution center or execute the deliveries or instructions to meet other agents along his route.

Coordination between delivery agents may be arranged via cell phones, intercom-enabled devices such as walkie-talkies, short-range communicators, pagers, wireless email devices, etc. The elastic hand-off may be arranged to occur at any location that can be coordinated while adhering to the customer-specified delivery schedule already in place.

In a large delivery area such as Manhattan, New York, distribution centers may be geographically distributed to serve residential areas and commercial areas, where the delivery agents may periodically return to the distribution center. The delivery agents may also be met periodically with new deliveries and routing instructions at any location that may be arranged between the agents, where one agent hands off the orders to be delivered to another agent.

Delivery Agent Communications

Any one of various types of wireless mobile computing devices may be carried by the agents so that they may remain in constant communication with the dispatchers. The dispatcher communicates with the mobile computing devices to allow the delivery agents to receive delivery information and new routing instructions.

As described above, the delivery agent may be contacted via cellular phone. The agent may carry a mobile computing device that has means for receiving the routing information related to the deliveries to be made, memory means for storing the routing instructions, and presentation means for displaying the routing instructions. It may additionally have input means to provide comments related to the delivery that may be stored for subsequent deliveries to that destination, transmitting means to provide real-time status to the delivery and ordering systems, and positioning means such as a global position indicator system for determining the physical location of the agent with respect to the route.

Real-time tracking of the current position of the delivery agent on his delivery route may be accommodated for the dispatch managers, where the agent carries a transmitter that relays positional information to the server system. In the preferred embodiment, this may be performed by using a GPS-enabled mobile computing device that periodically indicates the delivery agent's location using wireless communications. This visibility information may be provided

to the customer, where the customer may enter their order number to view the current location of their delivery and to see the progress made on a map provided by the web server. In another embodiment, when the customer enters the order number, the system may provide to the customer a display of the amount of time remaining until delivery. This would allow the customer to get a very accurate representation of the status of their order.

A digital camera ("WebCam") will be used to provide online customers with a "first person" view of the delivery of their order. The delivery agent in the field will be provided with a mobile digital camera which will be capable of transmitting digital video through a third party network back to the web server. The web server will then present the video over the Internet. This concept can be used in many ways.

One way will be to provide every customer with a live video feed of the delivery of their order. As the delivery agent wends his way through crowded, dangerous city streets the customer can root from them from the comfort of their home. This should provide them with some idea of the benefits of delivery as well as entertainment until their movies, games, popcorn, etc. arrive.

On a more limited scale, this could be used as a promotional offer on a market by market basis. This would allow us to use it as a more selective promotional tool.

As an interim step to personalized video, we could randomly show a live video feed, which would be visible to

all customers. This feed could just as easily be from a rider in a different city, as well.

This concept is dependent upon radically increased capabilities to convey large amounts of data over a cellular network in real time. In the short term, live video could be replaced with snapshots.

In order to preserve the privacy of our customers, the video/snapshots would be paused when the rider is actually delivering the order.

This information, combined with online information regarding the progress of the rider (an ETA, number of orders before the user's that must be delivered by the rider) would provide the most advanced order tracking information available today.

Integration with Etailer Websites

Another feature of the system is the ability to integrate with existing ecommerce or etailer websites such as http://www.books.com. This integration feature will allow consumers that are utilizing the etailer web site to make a purchase of an item such as a book to be given the option of having the book delivered within the hour by a delivery agent from the nearest spoke distribution center, rather than by the normal delivery mode otherwise available from the etailer web site, such as one-day delivery. That is, for a given set of items that are maintained in inventory by the system at the various distribution centers, the consumer may choose one-hour delivery by the system of the present

invention, even though the consumer is otherwise unaware of the one-hour delivery system and web site.

Referring again to Figure 1, the system 2 is configured to provide a communication link directly between a "B2B" (business to business) server 20 and an affiliated etailer web site 22, such as by a virtual private network (VPN) connection 21 or the like. When a consumer has selected an item for purchase from the etailer website 22, the etailer website 22 will check (e.g. by internal lookup table or the like) to see if that item is one that is normally carried by the one-hour delivery system 2 for its customers. The etailer web site 22 will query the system 2 through the B2B server 20 and provide the requested item identification as well as the zip code of the requesting customer. The system 2 will check its database 8 to ensure that the requested item is in fact available at the distribution center associated with that zip code. An affirmative reply to the etailer web site 22 will result in the etailer customer being provided with the option for one-hour delivery. If the customer foregoes the one-hour delivery service, then the etailer web site 22 will cause delivery to be made in the normal course of business, and there is no further interaction with the system 2. If, however, the consumer chooses the one-hour delivery service, then the etailer website 22 carries out the transaction with the customer and sends an instruction to the system 2 to reserve that item in the appropriate distribution center 6 and deliver it to the customer (the etailer website 22 will of course have to provide the delivery address and name of the customer since he may not be a registered user of the one-hour delivery system 2). The etailer website 22 will effect payment to

the system 2 and provide revenue sharing if agreed to between the parties.

Thus, in accordance with this aspect of the invention, the existing infrastructure of the one-hour delivery service may be advantageously utilized by affiliated etailer web sites 22 that offer the same (or even similar) items for sale so that their customers may benefit from the immediate delivery system 2 embodied by this invention.

Enterprise Resource Planning

Shown also in Figure 1 is an enterprise resource planning server (ERP) 24, which is interconnected with the product database 8. The ERP 24 is also interconnected with each distribution center 6 for effecting data transfers there between. The ERP performs item purchasing and receiving functions as well as financial utilities necessary for back office operations. In particular, when it is determined that certain items need replenishment at a particular distribution center 6, then orders are placed with the required item's manufacturer or distributor and the items are delivered to the appropriate distribution center. Upon receipt at the receiving dock, the receipt of the item is logged for bill payment and inventory purposes by the center informing the ERP of the addition of the item to stock at that location. This is updated in the database 8 so that the system will indicate the availability of that item at that distribution center when a customer in that delivery area 4 requests the item.

Delivery-Based Real-Time Discounting

In another aspect of the invention, the consumer may be provided with the ability to obtain items for purchase and immediate delivery through a delivery-based real-time discounting methodology, wherein a discount could be provided for requesting delivery of items at those times when it has been determined that a delivery agent will be delivering existing orders to other nearby customers. The methodology is implemented on the premise that a delivery agent may be scheduled to deliver an order to a customer in a certain location, but may not have to leave for a half hour. Since the delivery agent has unused capacity for that delivery, and time still remains in which an order could be placed, paid for, picked and given to the delivery agent, it would be advantageous to provide a incentive to have consumers along that delivery route place an order at that time. By offering a discount or other incentive (e.g. free rental) to certain consumers at that time, this methodology is realized.

Thus, for example, when it is determined that customers in a certain area should be given a discount at a certain time, then the consumers that are connected to the web server could be displayed a message like "If you reside in New York on 5th Avenue between 45th and 55th streets, you will get a 10% discount on any order placed in the next ten minutes!" Any such order received in time will be processed, picked, and given to the delivery agent that is already waiting to execute the route in that area. In addition, pickups of previously rented items could be made along that route free of charge, or discounted, as desired by the system administrator.

Because the discount in this methodology is based on the time of an existing delivery and the location of that delivery, those parameters must be used to determine which customers are eligible for the discount. In addition to providing web page updates to indicate the potential availability, a link could be included to a web page dedicated to this feature, which would list all possible discounts based on routes and time of day, which would of course by changing rapidly as delivery routes change throughout the day. Email could also be used to effectuate this type of real-time advertising methodology. Email could help target potential users with effective accuracy, since individual users can be targeted by using their registration profile (i.e. all customers residing in the Trump towers could be sent an email to advise of the potential discount at that time).

The potential discount to be provided can be made as a function of the number of delivery slots open on a given route. Thus, if a route has in theory ten delivery slots that can be made within the hour, and only two customers on that route have placed an order near each other in time, then there are eight potential delivery slots open for customers to use. A larger discount could be given to the customers that place the new order in response to the email/ad first, so that there is incentive to fill the slots quickly. When only one slot is left, the discount would be smaller. A real-time graphic could be displayed to show how discounts are being reduced as a function of the passage of time (and other customers opting in), thus further incentivizing customers to fill the remaining slots.

Intelligent Replication System

The system of the present invention may operate to serve numerous geographic regions such as Seattle, New York, and Washington, using the same infrastructure and databases. That is, the server 12 could route an order to any distribution center, based on the delivery zip code, whether that zip code is in one city or another. This results in one large database to service many cities, each having numerous distribution centers therein. In this case, a user who lives and registers in New York could access the system while in Seattle, enter a Seattle zip code, and be serviced by the appropriate Seattle spoke distribution center while maintaining the customer's "home" registration information such as credit card number. In an alternative embodiment, several scaled-down systems may be used, with each one operating for each city or region and having databases covering only that region. In this case, since each geographically disparate region operates essentially independently from the others (i.e. you obviously can't order an item from your normal New York distribution center for one hour delivery to your vacation home in Seattle), the inventors have determined that it would be useful to be able to provide certain database replication features to avoid the requirement of existing customers having to re-register in the remote regions with the system that serves that region.

Thus, in the alternative embodiment, to make the ordering process for customers convenient, an optional intelligent replication system will regionalize the e-commerce environment. This regionalization of the e-

commerce environment will allow customers to go out of their region, access their accounts from anywhere in the United States, and place an order without having to re-register.

Through a notification process, the customer will tell the system where he will be. For example, a customer may be domiciled in Seattle and needs to travel from Seattle to New York for a certain period. The intelligent replication system will route the customer's personal file from his home base to the selected destination.

WE CLAIM:

1. A method of a customer ordering an item for delivery to a selected one of a plurality of delivery locations, each delivery location located within at least one of several predefined delivery zones, comprising the steps of:

a) providing an identifier web page from an order server computer to a client computer associated with the customer, the identifier web page comprising a field for entry of a geographic identifier associated with the desired delivery location;

b) the customer entering the geographic identifier associated with desired delivery location for submittal to the order server computer; and

c) the order server computer determining, as a function of the geographic identifier received from the customer, a group of available items for delivery to the desired delivery location, the group of available items being located in a distribution center associated with the desired delivery location.

2. The method of claim 1 wherein the geographic identifier is a zip code.

3. The method of claim 1 wherein the geographic identifier is a street address.

4. The method of claim 1 wherein each delivery zone has associated therewith a distribution center, each distribution center having stored therein a group of items available for delivery to an associated delivery location, and wherein the order server computer determines a group of available items for delivery to the desired delivery location by accessing a system database comprising information on all items available at all distribution centers and extracting information on only those items indicated in the system database as being available at the distribution center associated with the desired delivery location.

5. The method of claim 4 wherein an item availability web page is dynamically created by the order server computer and served to the client computing device for display thereon, the item availability web page comprising a list of items available at the distribution center associated with the desired delivery location.

6. The method of claim 31 further comprising the step of the customer selecting at least one item for delivery to the desired delivery location by indicating on an order web page to be transmitted to the order server computer.

7. The method of claim 6 further comprising the step of compiling an order for the customer, the order comprising at least one item selected by the customer for delivery to the desired delivery location.

8. The method of claim 7 further comprising the step of transmitting the order from the order server computer to a distribution center computer associated with the distribution center associated with the desired delivery location.

9. The method of claim 8 wherein the order is pushed by the order server computer to the distribution center computer in a predetermined manner controlled by the order server computer.

10. The method of claim 8 wherein the order is pulled from the order server computer by the distribution center computer in a predetermined manner controlled the distribution center computer.

11. The method of claim 8 further comprising the step of fulfilling the order by retrieving each item selected by the customer and indicating in the distribution center computer that the retrieved item is no longer available for subsequent ordering.

12. The method of claim 11 wherein the distribution center computer comprises a local database of all items available at the associated distribution center, and wherein the local database is synchronized with the system database so that the system database has an accurate representation of the available items in the local database.

13. The method of claim 12 wherein the synchronization step occurs on a periodic basis.

14. A system for allowing a customer to order an item for delivery to a selected one of a plurality of delivery locations, each delivery location located within at least one of several predefined delivery zones, comprising:

a) an order server computer comprising means for providing an identifier web page over a network to a client computer associated with a customer, the identifier web page comprising a field for entry of a geographic identifier associated with the desired delivery location; and

b) a client computer comprising
input means for allowing the customer to enter the geographic identifier associated with desired delivery location, and
means for submitting the geographic identifier to the server computer;

wherein the order server computer further comprises means for determining, as a function of the desired delivery location received from the client computer, a group of available items for delivery to the desired delivery location, the group of available items being located in a distribution center associated with the desired delivery location.

15. The system of claim 14 wherein the geographic identifier is a zip code.

16. The system of claim 14 wherein the geographic identifier is a street address.

17. The system of claim 14 wherein each delivery zone has associated therewith a distribution center, each distribution center having stored therein a group of items available for delivery to an associated delivery location, and wherein the order server computer means for determining a group of available items for delivery to the desired delivery location comprises means for accessing a system database comprising information on all items available at all distribution centers and means for extracting information on only these items indicated in the system database as being available at the distribution center associated with the desired delivery location.

18. The system of claim 17 wherein the order server computer comprises means for dynamically creating an item availability web page and means for serving the item availability web page to the client computer for display thereon, the item availability web page comprising a list of items available at the distribution center associated with the desired delivery location.

19. The system of claim 18 wherein the client computer comprises means for allowing the customer to select at least one item for delivery to the desired delivery location by indicating on an order web page to be transmitted to the order server computer.

20. The system of claim 19 further comprising means for compiling an order for the customer, the order comprising at least one item selected by the customer for delivery to the desired delivery location.

21. The system of claim 20 further comprising means for transmitting the order from the order server computer to a distribution center computer associated with the distribution center associated with the desired delivery location.

22. The system of claim 21 wherein the order is pushed by the order server computer to the distribution center computer in a predetermined manner controlled by the order server computer.

23. The system of claim 21 wherein the order is pulled from the order server computer by the distribution center computer in a predetermined manner controlled the distribution center computer.

24. The system of claim 21 further means for fulfilling the order by retrieval of each item selected by the customer and means for indicating in the distribution center computer that the retrieved item is no longer available for subsequent ordering.

25. The system of claim 24 wherein the distribution center computer comprises a database of all items available at the associated distribution center, and wherein the database is synchronized with the order server computer so

that the order server computer has an accurate representation of the available items in the distribution center computer.

26. The system of claim 25 wherein the synchronization occurs on a periodic basis.

27. A method of creating an order delivery manifest comprising the steps of:

generating a plurality of item delivery orders, each item delivery order comprising a list of items selected by a customer for delivery to a desired delivery location within a predefined window of delivery time;

determining an optimal sequence of delivery of each of the plurality of item delivery orders in succession by a single delivery agent to each associated desired delivery location within the predefined window of delivery time; and

assembling the optimal sequence of delivery into an order delivery manifest for use by a delivery agent in delivering the plurality of item delivery orders within the predefined window of delivery time.

28. The method of claim 27 wherein the step of determining an optimal sequence of delivery comprises the steps of:

displaying the plurality of item delivery orders on a computer display screen in tabular format; and

a dispatcher manually analyzing the plurality of item delivery orders on the computer display

screen to determine the optimal sequence of delivery.

29. The method of claim 28 wherein the step of manually analyzing comprises the steps of:

reviewing the desired delivery location for each item delivery order; and

determining a logical grouping of item delivery orders based on the relative proximity of each item delivery order with respect to each other.

30. The method of claim 29 further comprising the steps of:

reviewing the predefined window of delivery time for each item delivery order; and

determining the logical grouping of item delivery orders based also on the predefined window of delivery time for each item delivery order to ensure that the delivery agent will be able to deliver each item delivery order within the associated predefined window of delivery time.

31. The method of claim 29 further comprising the steps of:

analyzing item parameters associated with the items selected by the customer for delivery; and

determining the logical grouping of item delivery orders based also on the analyzed item parameters.

32.The method of claim 31 wherein the item parameters comprise the size of each item.

33.The method of claim 31 wherein the item parameters comprise the weight of each item.

34. The method of claim 31 wherein the item parameters comprise the perishable nature of each item.

35. The method of claim 29 further comprising the steps of:

reviewing the weather conditions existing in proximity of the desired delivery locations for each item delivery order; and

determining the logical grouping of item delivery orders based also on the reviewed weather conditions.

36. The method of claim 29 further comprising the steps of:

determining which delivery agent out of a pool of available delivery agents will be assigned to deliver the item delivery orders;

analyzing a database of delivery agent parameters associated with the assigned delivery agent; and

determining the logical grouping of item delivery orders based also on the analyzed delivery agent parameters.

37. The method of claim 36 wherein the delivery agent parameters comprise historical data regarding prior efficiency of the delivery agent.

38. The method of claim 27 wherein the order delivery manifest is printed for use by the delivery agent.

39. The method of claim 27 wherein the order delivery manifest is stored in electronic format in a hand held computing device suitable to be carried by the delivery agent.

40. The method of claim 27 wherein the step of determining an optimal sequence of delivery comprises the steps of:
displaying the plurality of item delivery orders on a computer display screen in a graphical map-based format; and
a dispatcher manually analyzing the plurality of item delivery orders on the computer display screen to determine the optimal sequence of delivery.

41. The method of claim 40 wherein the step of manually analyzing comprises the steps of:
reviewing the desired delivery location for each item delivery order; and
determining a logical grouping of item delivery orders based on the relative proximity of each item delivery order with respect to each other.

42. The method of claim 41 further comprising the steps of:
reviewing the predefined window of delivery time for each item delivery order; and

determining the logical grouping of item delivery orders based also on the predefined window of delivery time for each item delivery order to ensure that the delivery agent will be able to deliver each item delivery order within the associated predefined window of delivery time.

43. The method of claim 41 further comprising the steps of:

analyzing item parameters associated with the items selected by the customer for delivery; and

determining the logical grouping of item delivery orders based also on the analyzed item parameters.

44. The method of claim 40 further comprising the step of filtering a predefined group of item delivery orders from the computer display screen based in order to display only those item delivery orders having a certain property.

45. The method of claim 44 wherein the filtering is based on the desired delivery location.

46. The method of claim 44 wherein the filtering is based on the predefined window of delivery time.

47. The method of claim 27 wherein the step of determining an optimal sequence of delivery comprises the steps of:

displaying the plurality of item delivery orders on a first computer display screen in tabular format;

displaying the plurality of item delivery orders on a second computer display screen in a graphical map-based format; and

a dispatcher manually analyzing the plurality of item delivery orders set forth in the first computer display screen and the second computer display screen to determine the optimal sequence of delivery.

48. The method of claim 27 wherein the step of determining an optimal sequence of delivery comprises the step of automatically analyzing the plurality of item delivery orders by the steps of:

reviewing the desired delivery location for each item delivery order; and

automatically determining a logical grouping of item delivery orders based on the relative proximity of each item delivery order with respect to each other.

49. The method of claim 48 wherein the step of automatically analyzing the plurality of item delivery orders includes the additional steps of:

reviewing the predefined window of delivery time for each item delivery order; and

determining the logical grouping of item delivery orders based also on the predefined window of delivery time for each item delivery order to ensure that the delivery agent will be able to deliver each item delivery order within the associated predefined window of delivery time.

50. The method of claim 48 wherein the step of automatically analyzing the plurality of item delivery orders includes the additional steps of:

analyzing item parameters associated with the items selected by the customer for delivery; and

automatically determining the logical grouping of item delivery orders based also on the analyzed item parameters.

51. The method of claim 50 wherein the item parameters comprise the size of each item.

52. The method of claim 50 wherein the item parameters comprise the weight of each item.

53. The method of claim 50 wherein the item parameters comprise the perishable nature of each item.

54. The method of claim 48 wherein the step of automatically analyzing the plurality of item delivery orders includes the additional steps of:

reviewing the weather conditions existing in proximity of the desired delivery locations for each item delivery order; and

automatically determining the logical grouping of item delivery orders based also on the reviewed weather conditions.

55. The method of claim 48 further comprising the steps of:

determining which delivery agent out of a pool of available delivery agents will be assigned to deliver the item delivery orders;

analyzing a database of delivery agent parameters associated with the assigned delivery agent; and

automatically determining the logical grouping of item delivery orders based also on the analyzed delivery agent parameters.

56. The method of claim 55 wherein the delivery agent parameters comprise historical data regarding prior efficiency of the delivery agent.

57. A system for creating an order delivery manifest comprising:

a computer comprising a processor unit programmed to

receive from an externally connected computer a plurality of item delivery orders, each item delivery order comprising a list of items selected by a customer for delivery to a desired delivery location within a predefined window of delivery time;

determine an optimal sequence of delivery of each of the plurality of item delivery orders in succession by a single delivery agent to each associated desired delivery location within the predefined window of delivery time; and

assemble the optimal sequence of delivery into an order delivery manifest for use by a delivery agent in delivering the plurality of

item delivery orders within the predefined window of delivery time.

58. The system of claim 57 wherein the computer further comprises a computer display screen and input means for inputting data from a user, and wherein the processor unit is further programmed to:

display the plurality of item delivery orders on the computer display screen in tabular format; and

receive, via the means for inputting data, an optimal sequence of delivery from a dispatcher manually analyzing the plurality of item delivery orders on the computer display screen.

59. The system of claim 57 further comprising a printer connected to the computer, and wherein the processor unit is further programmed to cause the delivery manifest to be printed by the printer

60. The system of claim 57 further comprising output means for outputting a data file to an associated hand-held computing device, and wherein the processor unit is further programmed to cause the delivery manifest to be output via the output means to the hand-held computing device.

61. The system of claim 57 wherein the computer further comprises a computer display screen and input means for inputting data from a user, and wherein the processor unit is further programmed to:

display the plurality of item delivery orders on the computer display screen in a graphical map-based format; and

receive, via the input means, an optimal sequence of delivery from a dispatcher manually analyzing the plurality of item delivery orders on the computer display screen.

62. The system of claim 61 wherein the processor unit is further programmed to display a subset of the item delivery orders based on a request to filter the display of item delivery orders received from the input means.

63. The system of claim 57 wherein the computer further comprises a first computer display screen and a second computer display screen and input means for inputting data from a user, and wherein the processor unit is further programmed to:

display the plurality of item delivery orders on the first computer display screen in tabular format;

display the plurality of item delivery orders on the second computer display screen in a graphical map-based format; and

receive, via the means for inputting data, an optimal sequence of delivery from a dispatcher manually analyzing the plurality of item delivery orders on the computer display screens.

64. The system of claim 57 wherein the processor unit is programmed to determine an optimal sequence of delivery by

automatically analyzing the plurality of item delivery orders by (i) reviewing the desired delivery location for each item delivery order and (ii) automatically determining a logical grouping of item delivery orders based on the relative proximity of each item delivery order with respect to each other.

65. The system of claim 64 wherein the processor unit is also programmed to review the predefined window of delivery time for each item delivery order and automatically determine the logical grouping of item delivery orders based also on the predefined window of delivery time for each item delivery order to ensure that the delivery agent will be able to deliver each item delivery order within the associated predefined window of delivery time.

66. The system of claim 64 wherein the processor unit is also programmed to analyze item parameters associated with the items selected by the customer for delivery and automatically determine the logical grouping of item delivery orders based also on the analyzed item parameters.

67. The system of claim 66 wherein the item parameters comprise the size of each item.

68. The system of claim 66 wherein the item parameters comprise the weight of each item.

69. The system of claim 66 wherein the item parameters comprise the perishable nature of each item.

70. The system of claim 64 wherein the processor unit is also programmed to review the weather conditions existing in proximity of the desired delivery locations for each item delivery order and automatically determine the logical grouping of item delivery orders based also on the reviewed weather conditions.

71. The system of claim 64 wherein the processor unit is also programmed to analyze a database of delivery agent parameters associated with a delivery agent assigned to deliver the delivery orders and automatically determine the logical grouping of item delivery orders based also on the analyzed delivery agent parameters.

72. The system of claim 71 wherein the delivery agent parameters comprise historical data regarding prior efficiency of the delivery agent.

73. A method of a customer ordering an item for delivery to a selected one of a plurality of delivery locations, each delivery location located within at least one of several predefined delivery zones, comprising the steps of:

a) transmitting, from a client computer associated with the customer to an order server computer, an indicia indicative of a geographic identifier associated with the desired delivery location; and

b) the order server computer determining, as a function of the indicia received from the client computer, the geographic

identifier associated with the desired delivery location, and

as a function of the geographic identifier determined, a group of available items for delivery to the desired delivery location, the group of available items being located in a distribution center associated with the desired delivery location.

74. The method of claim 73 wherein the indicia is a cookie file previously stored on the client computer.

75. The method of claim 74 wherein the cookie file comprises the geographic identifier.

76. The method of claim 74 wherein the cookie file is used to lookup the geographic identifier at the order server computer.

77. The method of claim 73 wherein each delivery zone has associated therewith a distribution center, each distribution center having stored therein a group of items available for delivery to an associated delivery location, and wherein the order server computer determines a group of available items for delivery to the desired delivery location by accessing a system database comprising information on all items available at all distribution centers and extracting information on only those items indicated in the system database as being available at the distribution center

associated with the desired delivery location.

78. The method of claim 77 wherein an item availability web page is dynamically created by the order server computer and served to the client computing device for display thereon, the item availability web page comprising a list of items available at the distribution center associated with the desired delivery location.

79. The method of claim 78 further comprising the step of the customer selecting at least one item for delivery to the desired delivery location by indicating on an order web page to be transmitted to the order server computer.

80. The method of claim 79 further comprising the step of compiling an order for the customer, the order comprising at least one item selected by the customer for delivery to the desired delivery location.

81. The method of claim 80 further comprising the step of transmitting the order from the order server computer to a distribution center computer associated with the distribution center associated with the desired delivery location.

82. The method of claim 81 wherein the order is pushed by the order server computer to the distribution center computer in a predetermined manner controlled by the order server computer.

83. The method of claim 81 wherein the order is pulled from the order server computer by the distribution center computer in a predetermined manner controlled the distribution center computer.

84. The method of claim 80 further comprising the step of fulfilling the order by retrieving each item selected by the customer and indicating in the distribution center computer that the retrieved item is no longer available for subsequent ordering.

85. The method of claim 84 wherein the distribution center computer comprises a local database of all items available at the associated distribution center, and wherein the local database is synchronized with the system database so that the system database has an accurate representation of the available items in the local database.

86. The method of claim 85 wherein the synchronization step occurs on a periodic basis.

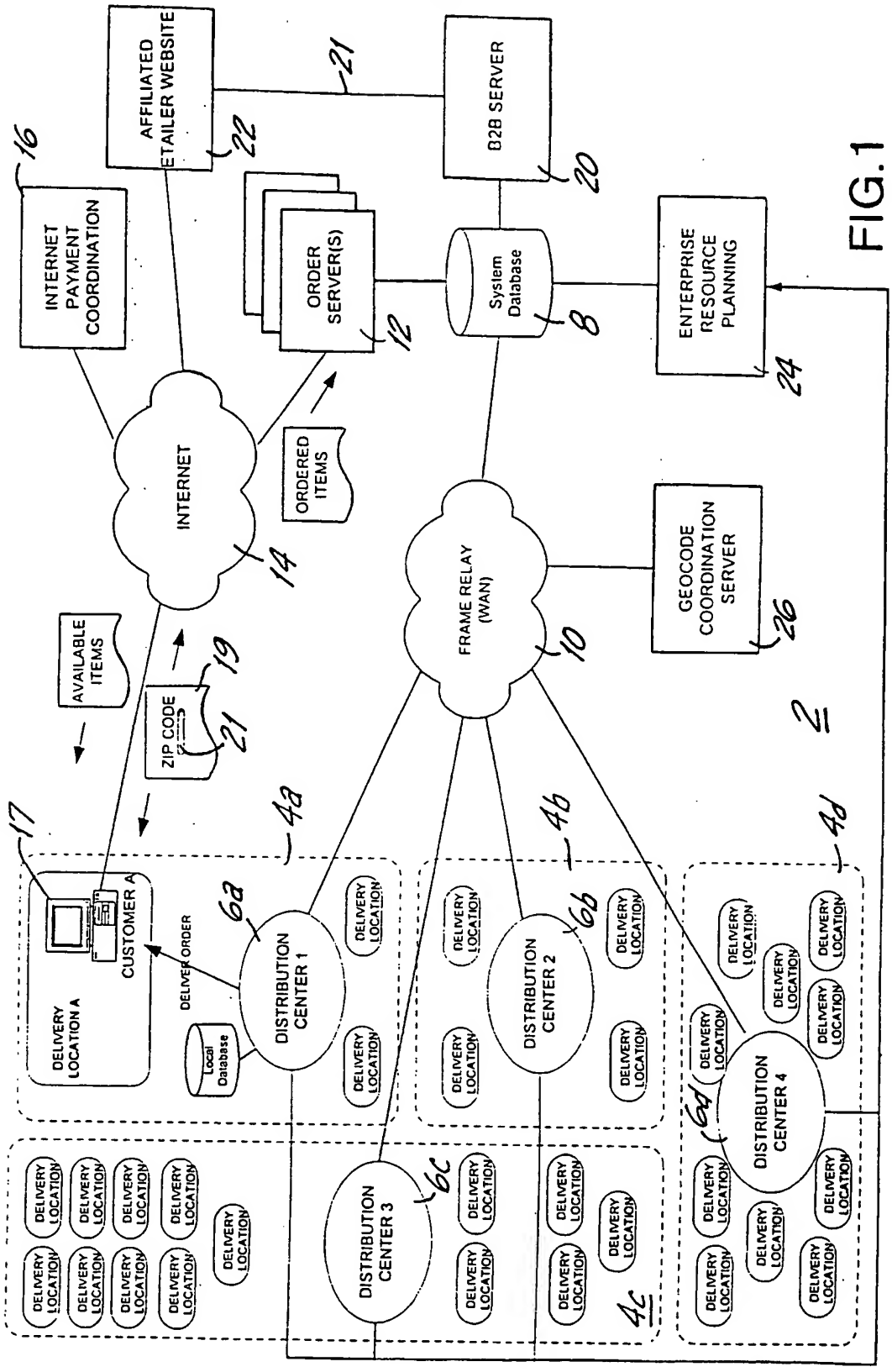
AFFILIATED RETAILER WEBSITE
B2B SERVER
INTERNET PAYMENT COORDINATION
ORDER SERVER(S)
System Database
ENTERPRISE RESOURCE PLANNING
INTERNET
ORDERED ITEMS
FRAME RELAY (WAN)
GEOCODE COORDINATION SERVER
AVAILABLE ITEMS
ZIP CODE
CUSTOMER A
DELIVERY LOCATION A
DELIVER ORDER
Local Database
DISTRIBUTION CENTER 1
DISTRIBUTION CENTER 2
DISTRIBUTION CENTER 3
DISTRIBUTION CENTER 4
DELIVERY LOCATION
16
17
19
21
22
20
12
8
24
14
10
26
2
4a
4b
4c
4d
6a
6b
6c
6d

FIG.1

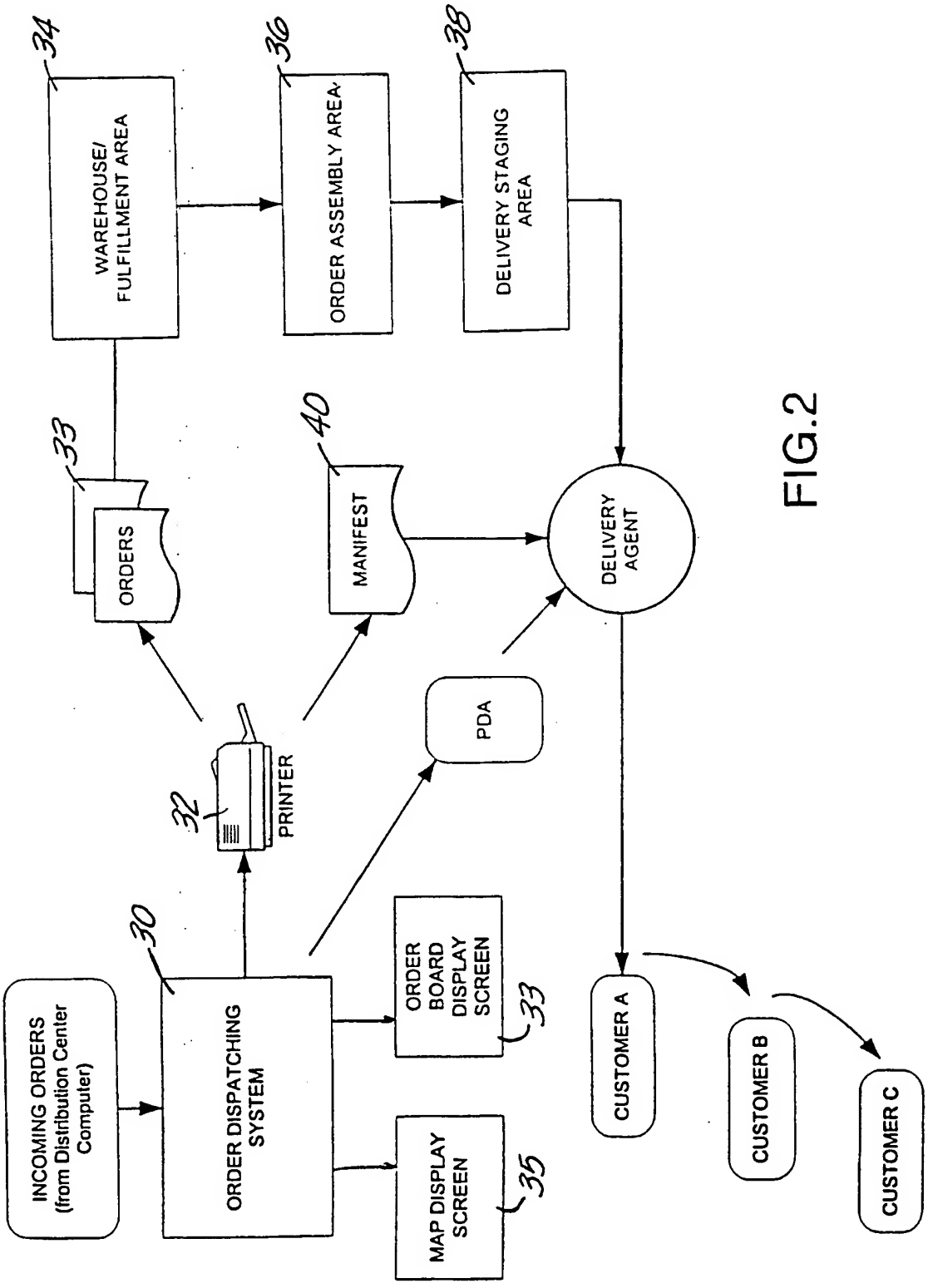
34
WAREHOUSE/ FULFILLMENT AREA
36
ORDER ASSEMBLY AREA
38
DELIVERY STAGING AREA
33
ORDERS
40
MANIFEST
DELIVERY AGENT
PDA
32
PRINTER
30
ORDER DISPATCHING SYSTEM
INCOMING ORDERS (from Distribution Center Computer)
ORDER BOARD DISPLAY SCREEN
33
MAP DISPLAY SCREEN
35
CUSTOMER A
CUSTOMER B
CUSTOMER C

FIG.2

Kozmo.com -- Manifest #1984914

Order#	Customer Name	Address	Delivery Time	Instructions
		Kozmo.com Manifest #1984914		kozmo.com
8236402	Laurie Lambert	99 Jane Street, Apt 5B. . . NEW YORK, NY 10014 WVG	2.30 PM - 3.30 PM	Please leave with doorman
Bags: 1	Amount: $4.32	Pay Method: VISA	Time:	Print Last Name:
8236135	tania goudas	341 west 11th St., Apt. # 8B. . New York, NY 10014 WVG	2.30 PM - 3.30 PM	BUZZ APT BA THIS TIME.
Bags: 1	Amount: $9.42	Pay Method: VISA	Time:	Print Last Name:

40

Employee Name: Nicole Castillo/T For customer Service call, (212)777-6912. Printed: 05/12/2000 2:49 PM

FIG.2A

kozmo.com
We'll be right ovre.

Order # 8230016
Robbie Tucker
320 West 83rd Street, #7E

10024

Order date/time: 5/12/2000 10:40AM
Deliver between: 5:30PM / 6:30PM

PROD #	DESC	BIN	DUE	TITLE	QTY	PRICE
1078070VRT	VHS - Rental	01-01-03F	SH 5/15 Noon	The Straight Story	1	3.99
1077274VRT	VHS - Rental	01-03-01A	5/15 Noon	Star Wars Episode I The Phantom Menace	1	3.99
1077525VRT	VHS - Rental	01-03-02C	5/15 Noon	Galaxy Quest	1	3.99

Bins: 2

Late Fees & Pickup Fees	4.00
Subtotal	15.97
Tax	0.99
TOTAL	16.96
Payment method	AMEX

WHERE TO RETURN YOUR RENTALS

Here are some of the drop boxes in your zip code:

- Caesar's Palace Pizzeria, 493 Amsterdam Avenue, Near the corner of 84th St. and Amsterdam, Sun to Mon 11am to 12am, Tues to Sat 11am to 1am
- Starbucks Coffee, 2379 Broadway, Corner of 87th Street, Sun-Th:6AM-10:30PM, Fri-Sat:6AM-12AM
- Capital Market and Deli, 573 Columbus Ave. Between 87th St and 88th St., 7:00am-12midnight Sun-Thurs, 7am-1am Fri-Sat

For more drop box locations, visit http://www.kozmo.com/dropoff. You may also call customer service at 1-877-GO KOZMO to schedule a pick up ($1.00 pick up fee). *Pick ups can be scheduled at any time during the rental period*

Thank you for choosing Kozmo.com!
Any Questions? Call Customer Service at 1 877 GO KOZMO [465-6966]

FIG.2B

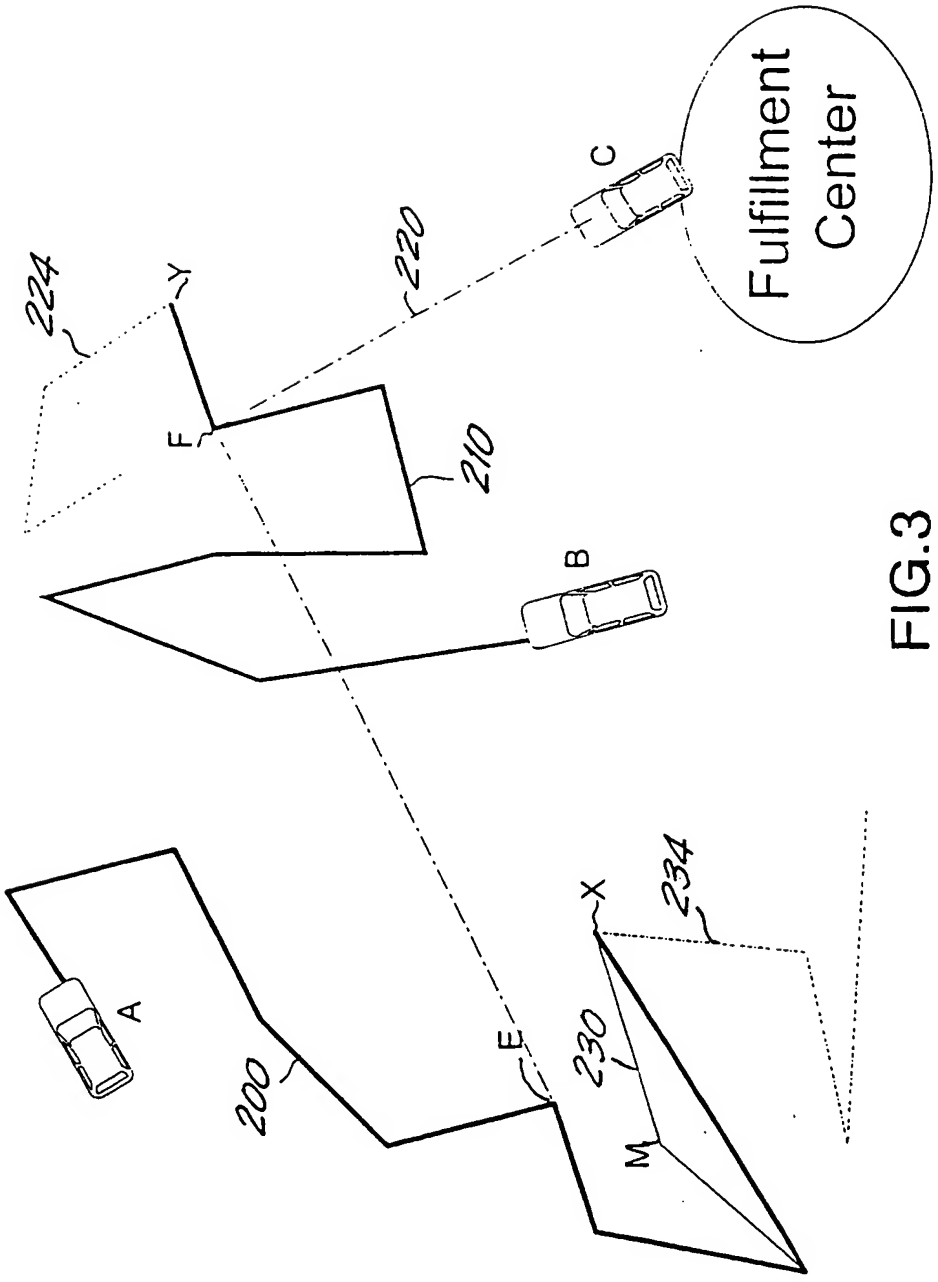

FIG.3

kozmo.com- The ultimate convenience. One hour delivery.

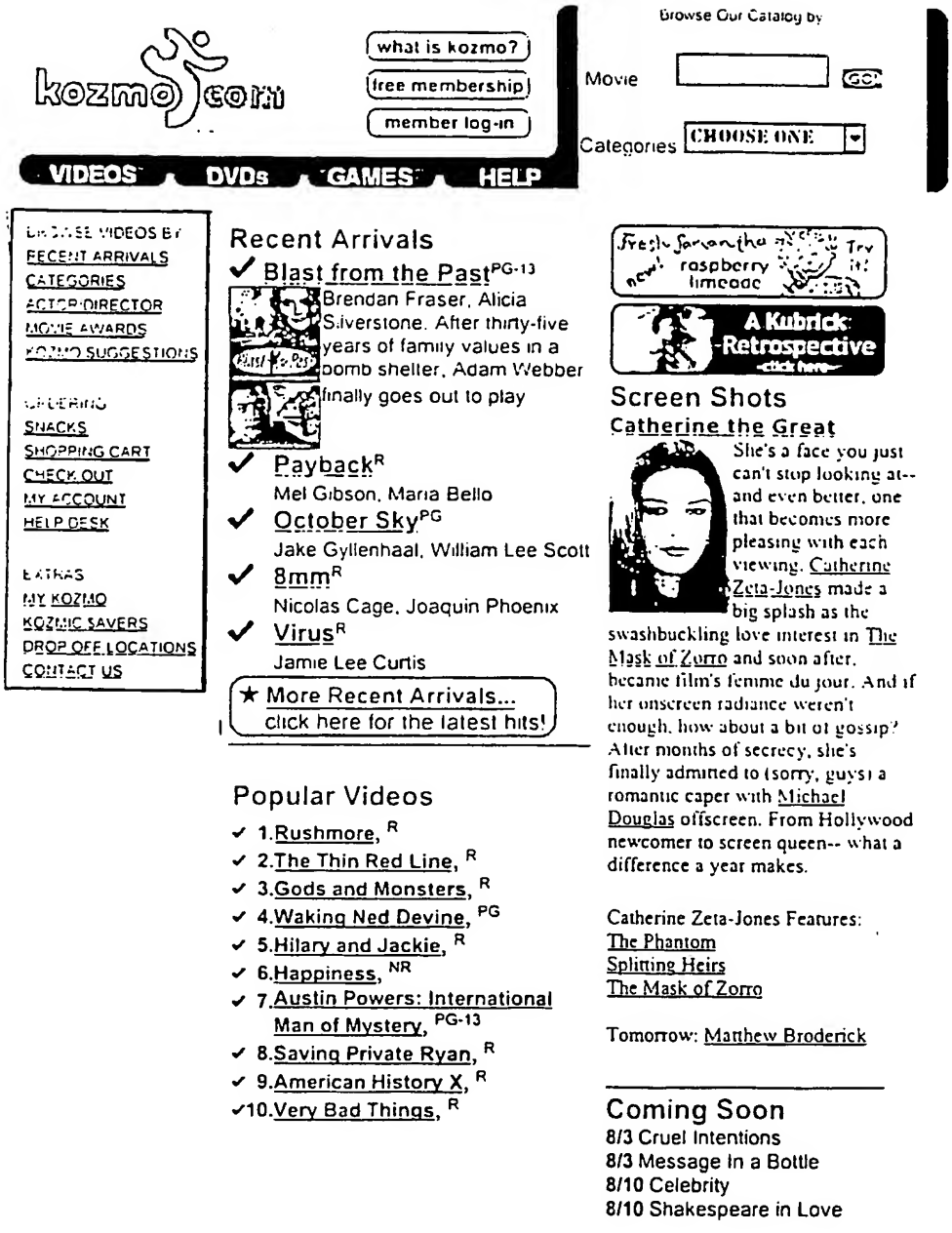

FIG.4

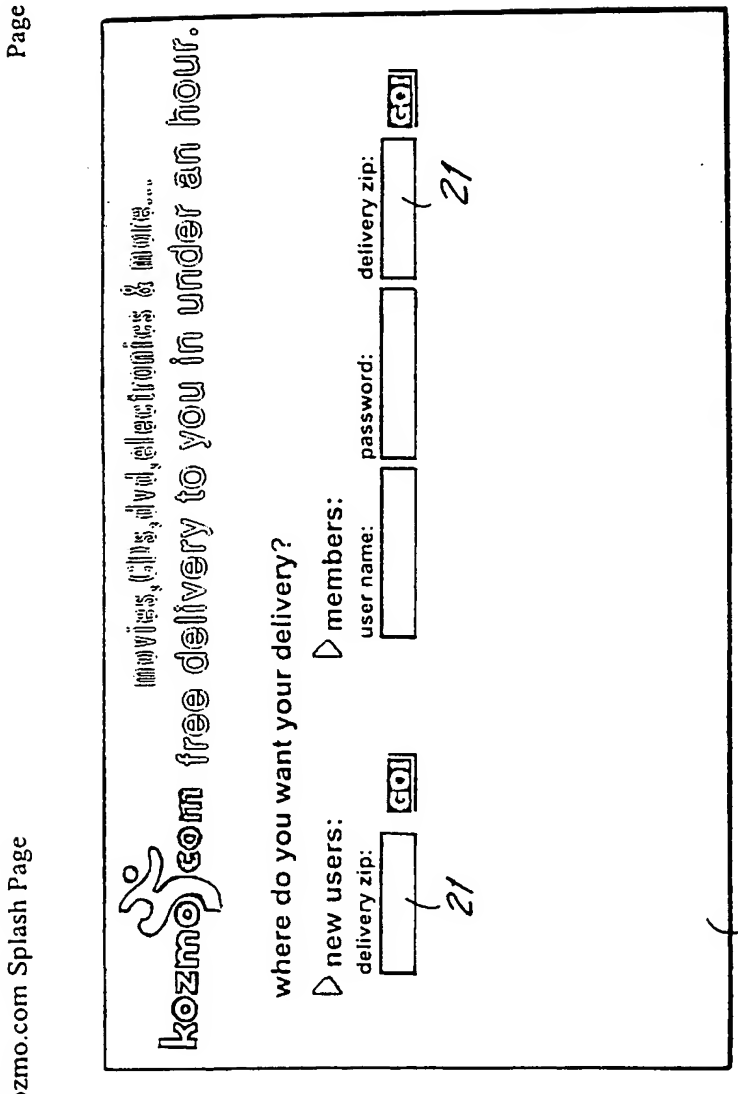
Kozmo.com Splash Page
Page 1 of 1
kozmo.com free delivery to you in under an hour.
where do you want your delivery?
new users:
delivery zip:
GO!
21
members:
user name:
password:
delivery zip:
GO!
21
19

FIG.5

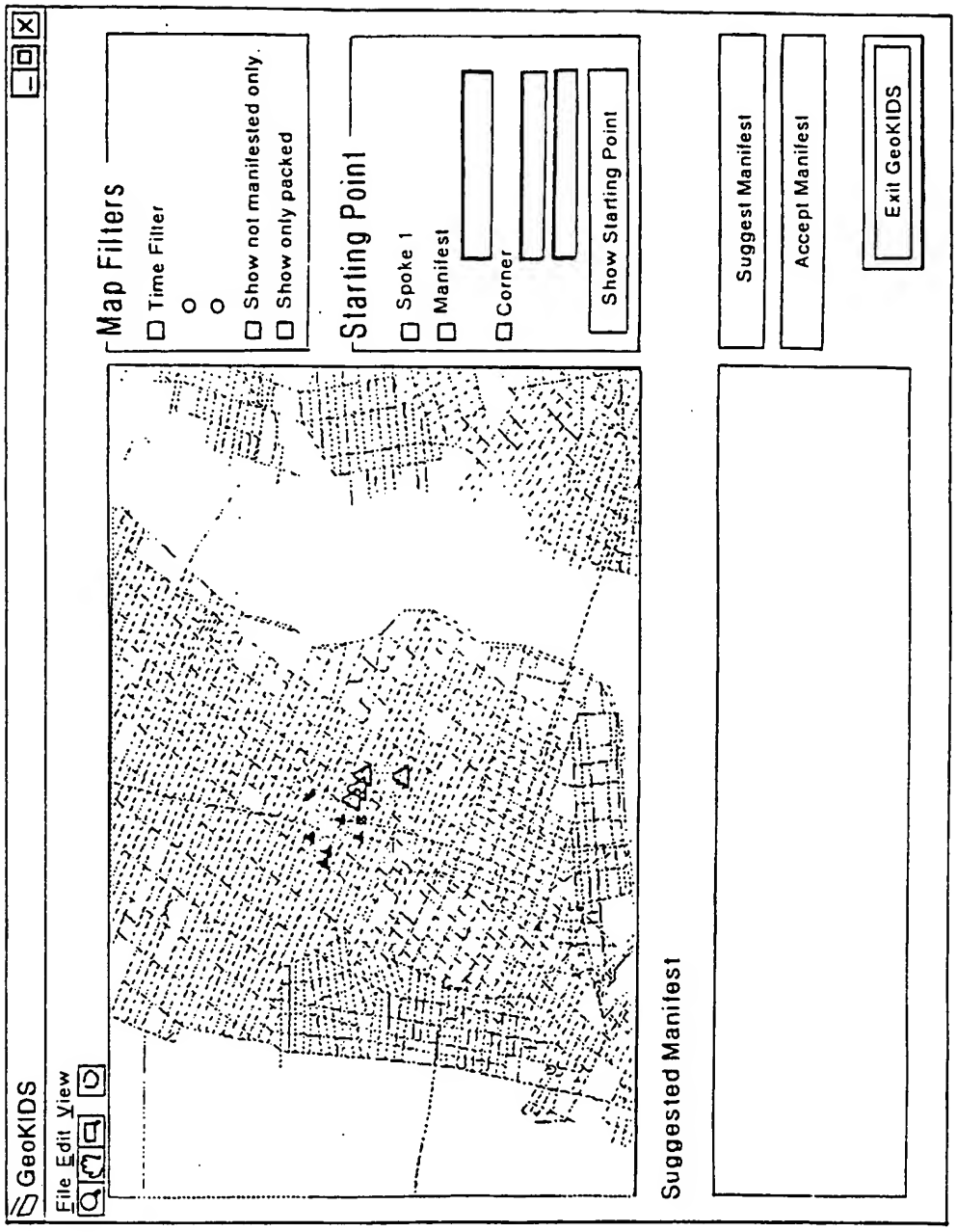
GeoKIDS
File Edit View
Map Filters
Time Filter
Show not manifested only
Show only packed
Starting Point
Spoke 1
Manifest
Corner
Show Starting Point
Suggest Manifest
Accept Manifest
Exit GeoKIDS
Suggested Manifest

FIG.6

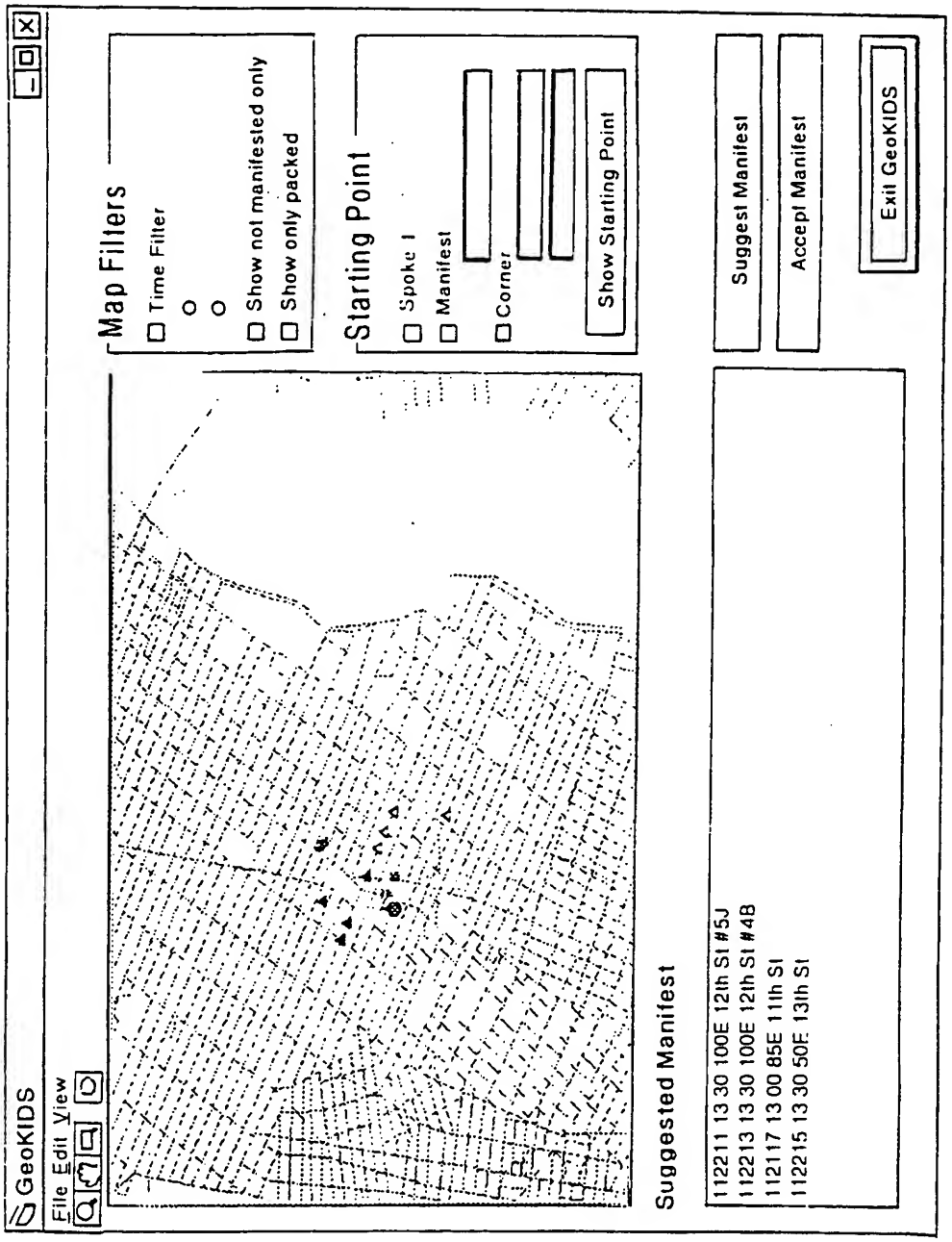
GeoKIDS
File Edit View
Map Filters
Time Filter
Show not manifested only
Show only packed
Starting Point
Spoke 1
Manifest
Corner
Show Starting Point
Suggest Manifest
Accept Manifest
Exit GeoKIDS
Suggested Manifest
112211 13 30 100E 12th St #5J
112213 13 30 100E 12th St #4B
112117 13 00 85E 11th St
112215 13 30 50E 13th St

FIG.7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/21504

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) :G06F 17/60
US CL :705/26, 27, 9
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/26, 27

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Extra Sheet.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4,797,818 A (COTTER) 10 January 1989, Figure 4, Column 2 and 4.	1-26, 73-86
A	US 5,710,887 A (CHELLIAH et al.) 20 January 1998	1-86
A	EP 0 845 747 A2 (TSUKUDA) 06 March 1998.	1-86
A	US 5,745,681 A (LEVINE et al.) 28 April 1998.	1-86
A	US 5,758,328 A (GIOVANNOLI) 26 May 1998.	1-86
Y,P	US 5,991,739 A (CUPPS et al.) 23 November 1999, Abstract, column 2, lines 20-38, column 6, lines 19-30, column 8, lines 43-55.	1-26

[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier document published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search 09 NOVEMBER 2000	Date of mailing of the international search report 02 JAN 2001
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer VINCENT MILLIN Telephone No. (703) 308-1065

Form PCT/ISA/210 (second sheet) (July 1998)*

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/21504

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 10214284 A (YAMADA) 11 August 1998.	1-86
Y	Internet Update, Newsbytes News Network, 10 September 1997, regarding Cybermeals.	1-26
Y	"On-Line Grocery To Grow -- But So Far Nobody's Found Out How," The Food Institute Report, Vol. 71, No. 49, 07 December 1998, regarding YourGrocer.com.	27-86
A	"TPG seeks partners for on-line trading," HfD Online, 19 January 1999, page 8.	1-86
A	FEUERSTEIN, A., "Internet grocer bags Safeway deal to go it alone; online food seemed like a no-brainer, but grocery customers have yet to bite," San Francisco Business Times, Vol. 13, No. 32, page 3, March 12, 1999.	1-86
Y	US 5,884,216 A (SHAH et al.) 16 March 1999.	27-72
Y	US 5,897,629 A (SHINAGAWA et al.) 27 April 1999	27-72

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/21504

B. FIELDS SEARCHED
Electronic data bases consulted (Name of data base and where practicable terms used):

DIALOG files 2, 9, 15, 16, 20, 35, 65, 77, 99, 146, 148, 160, 233, 275, 344, 347, 348, 349, 350, 387, 471, 473, 474, 475, 492, 494, 498, 583, 621, 623, 624, 630, 631, 632, 633, 636, 638, 640, 641, 702, 703, 704, 714, 715, 725, 735, 810, 813.